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1961

HAWAII MEDICAL JOURNAL AND INTER-ISLAND NURSES' BULLETIN

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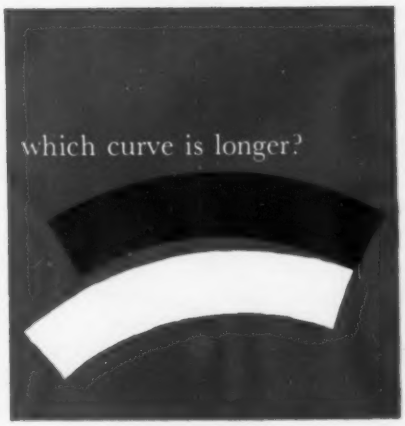

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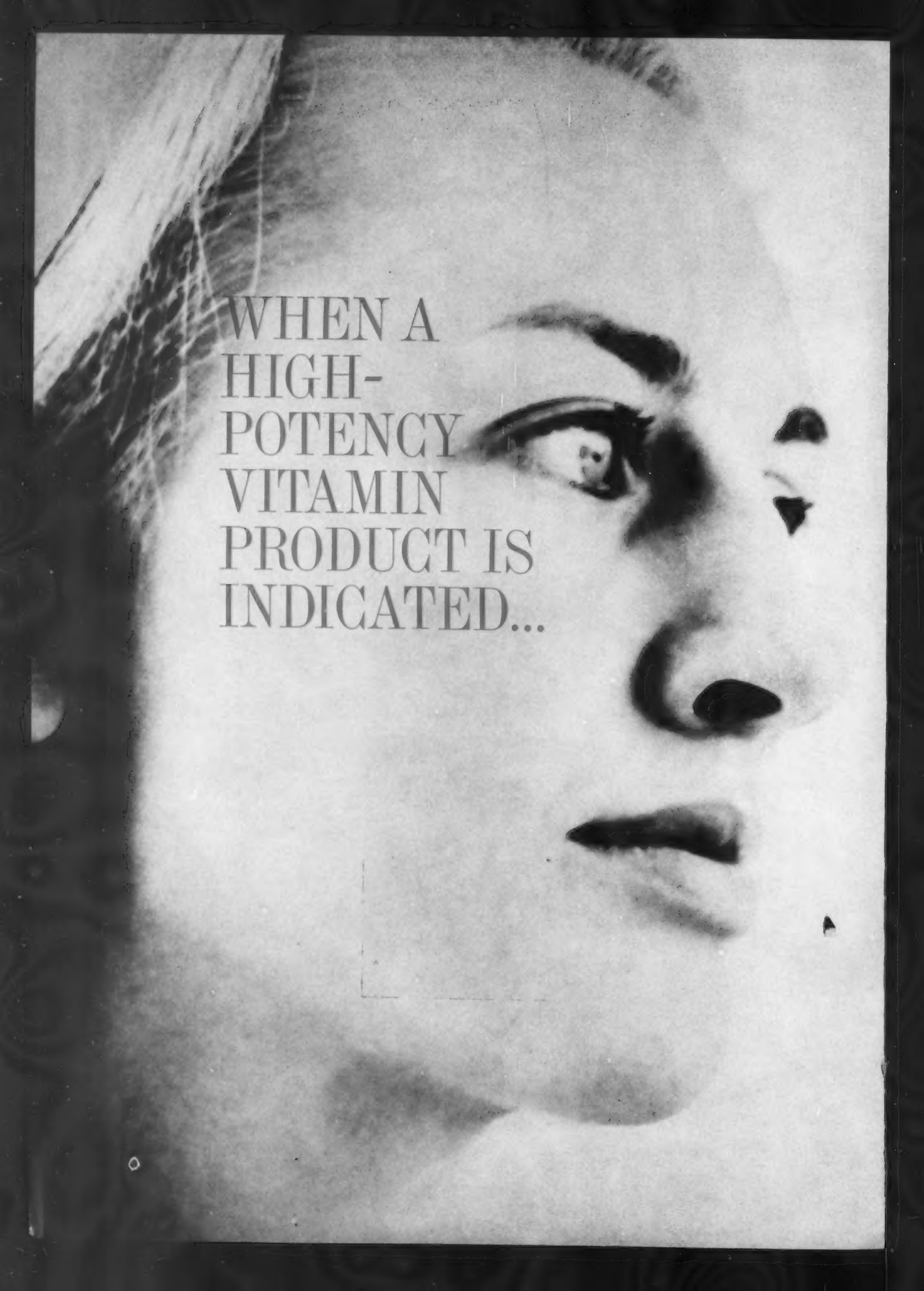
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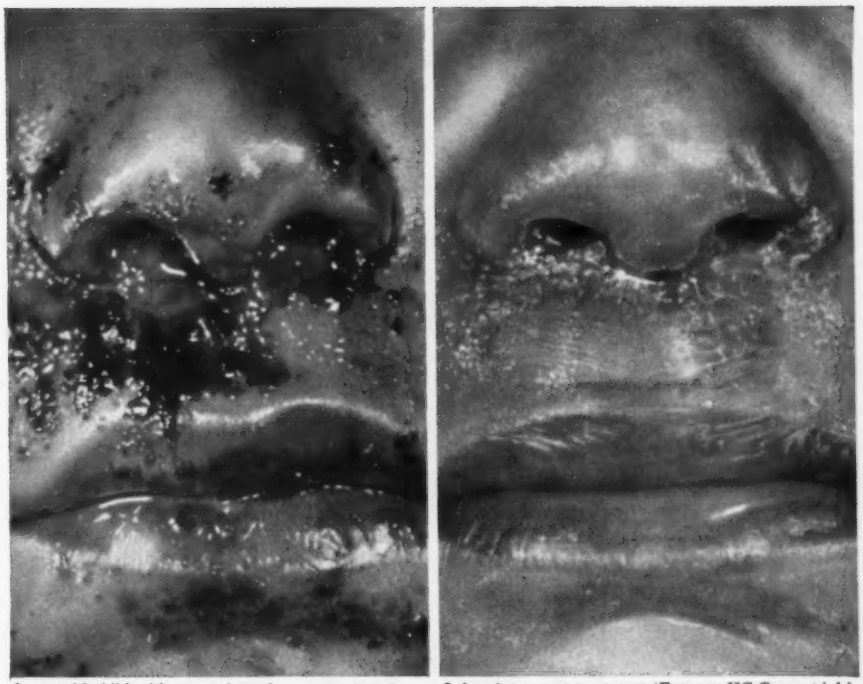

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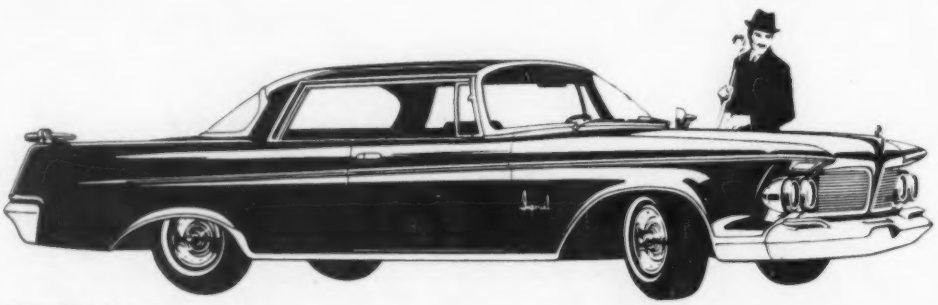

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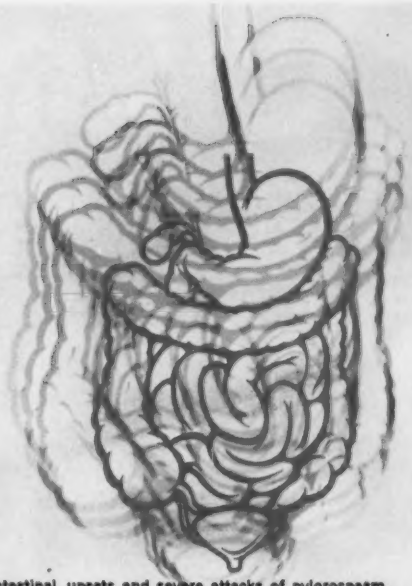

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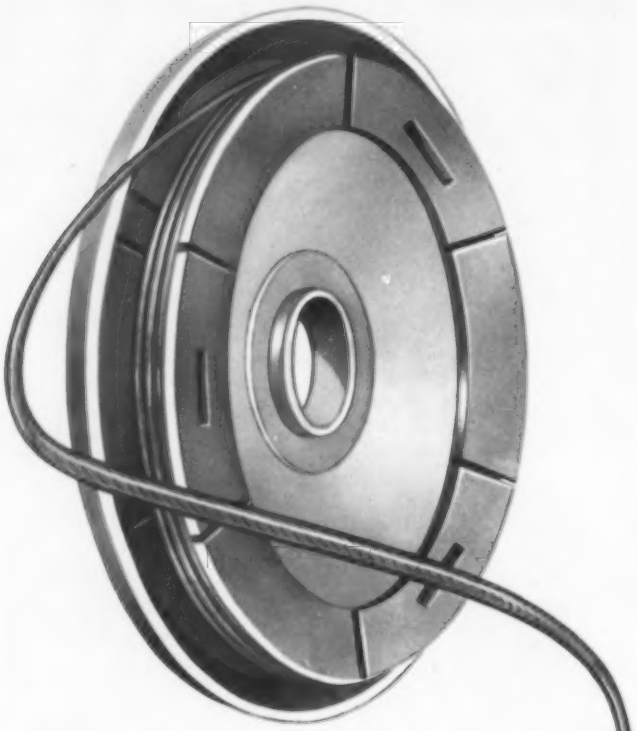

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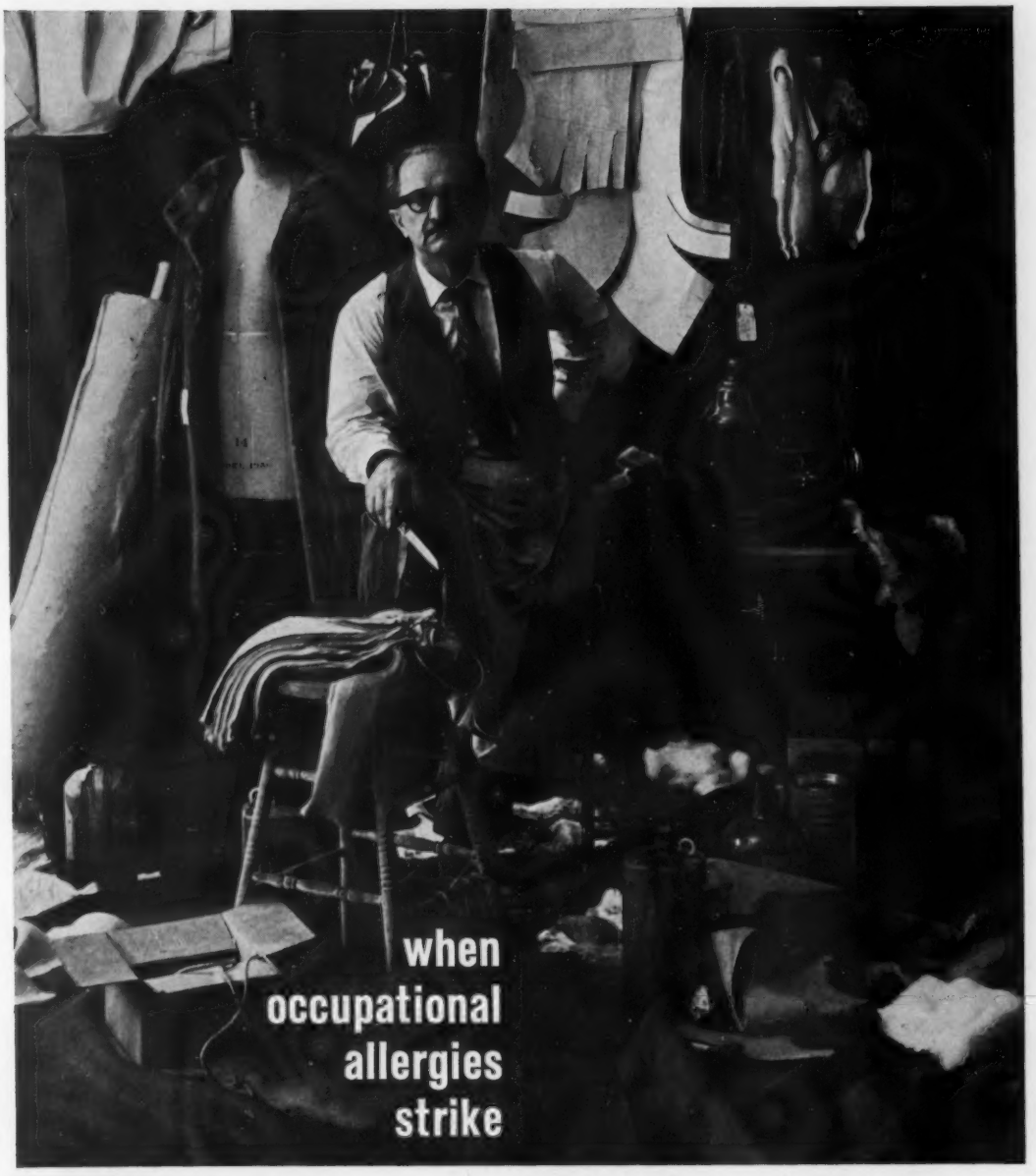

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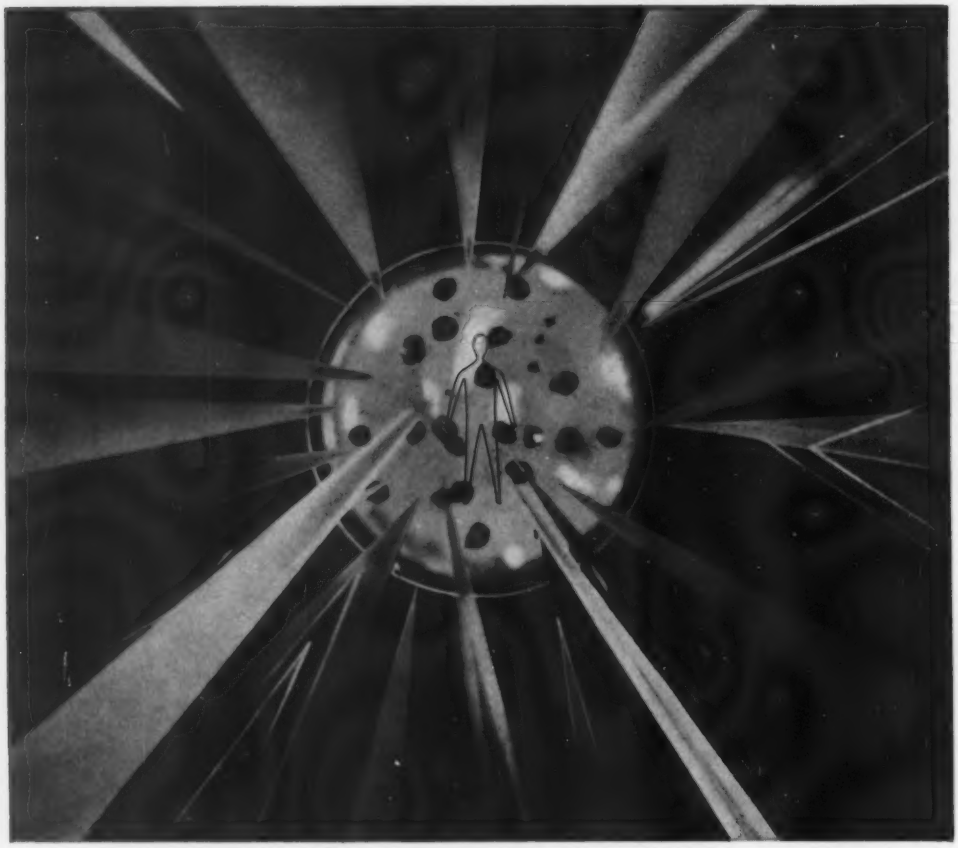

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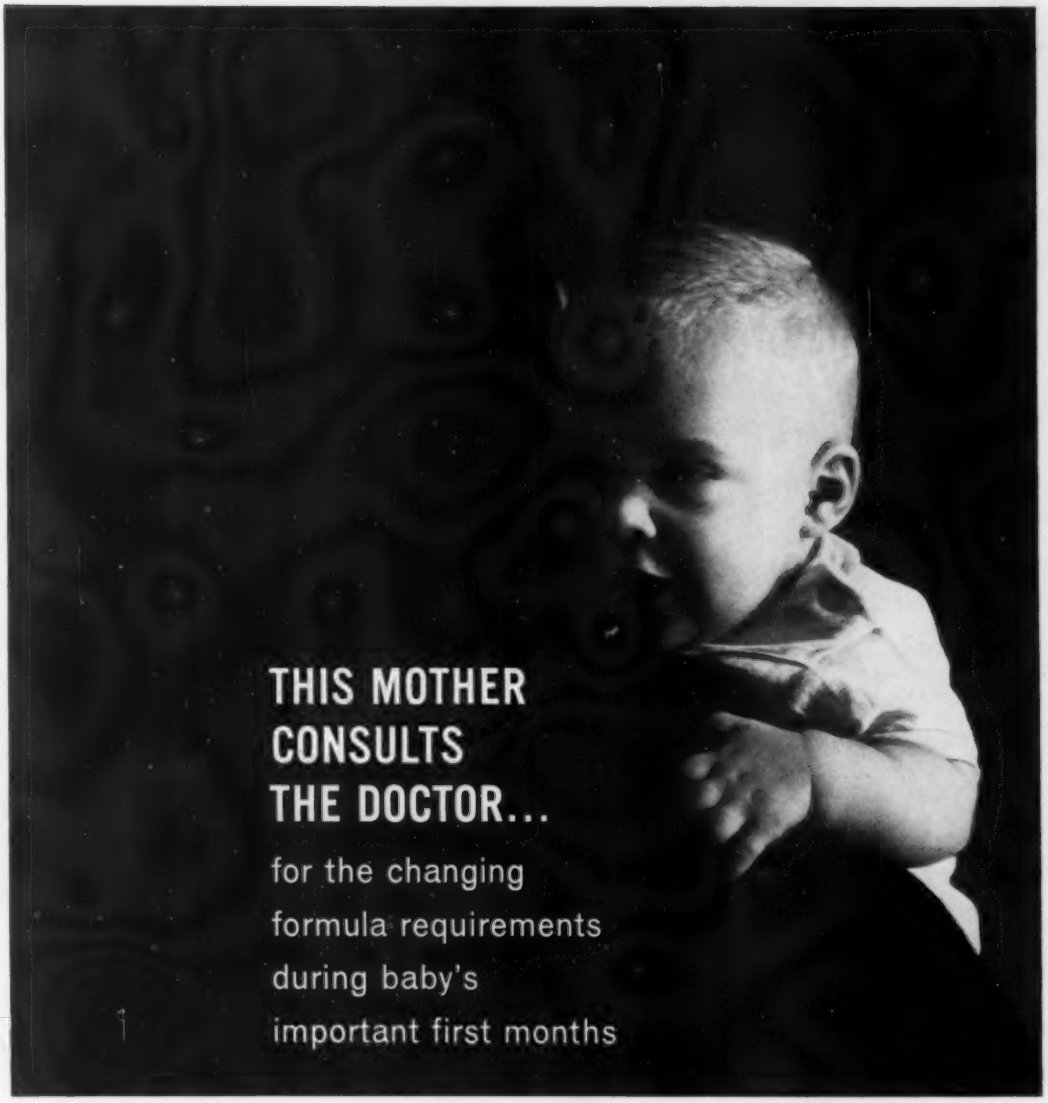

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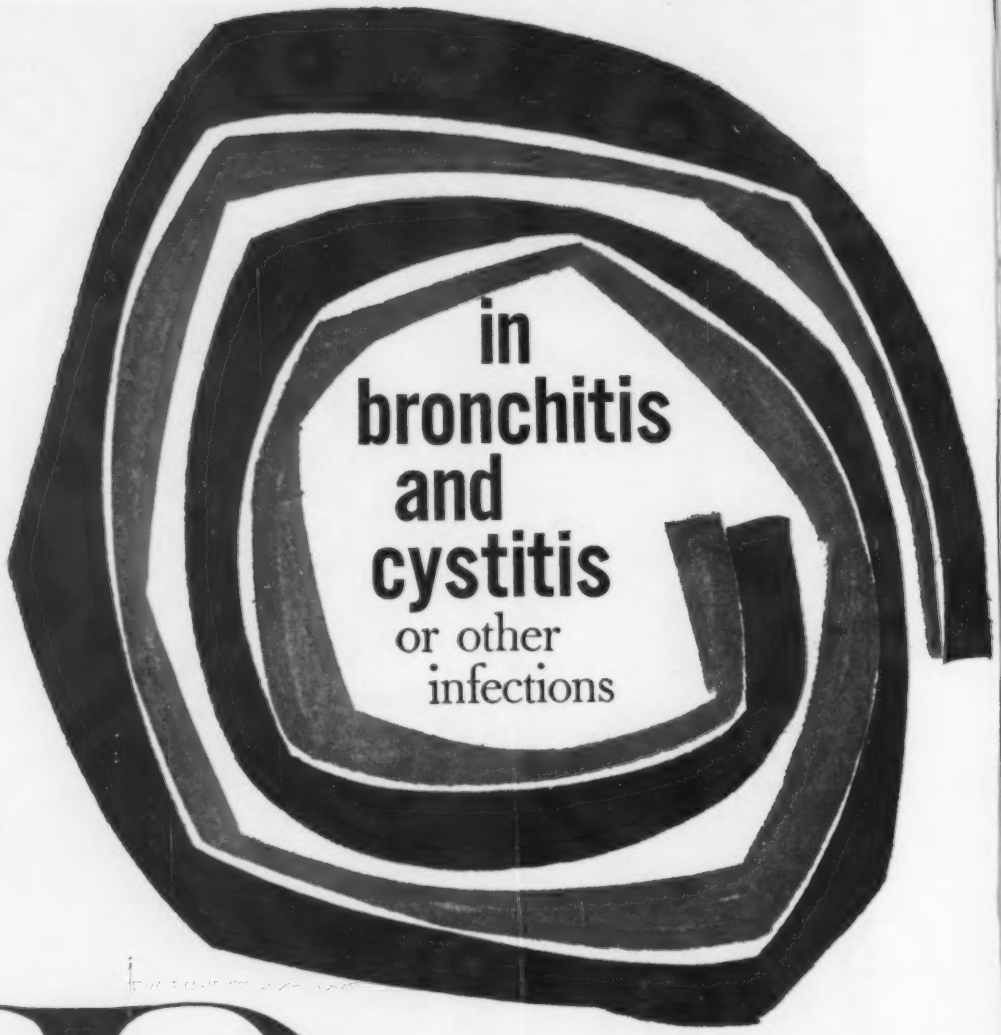

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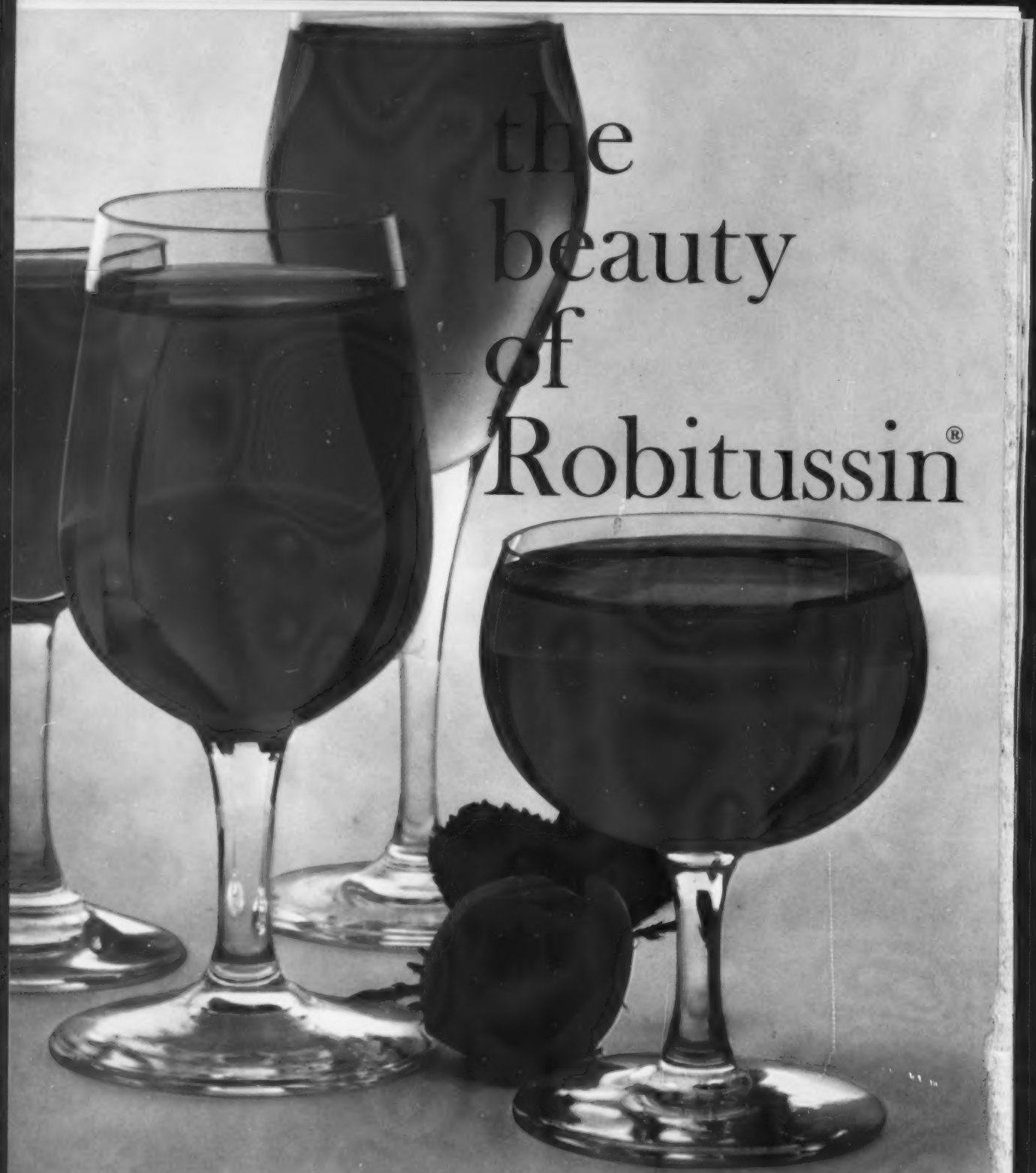

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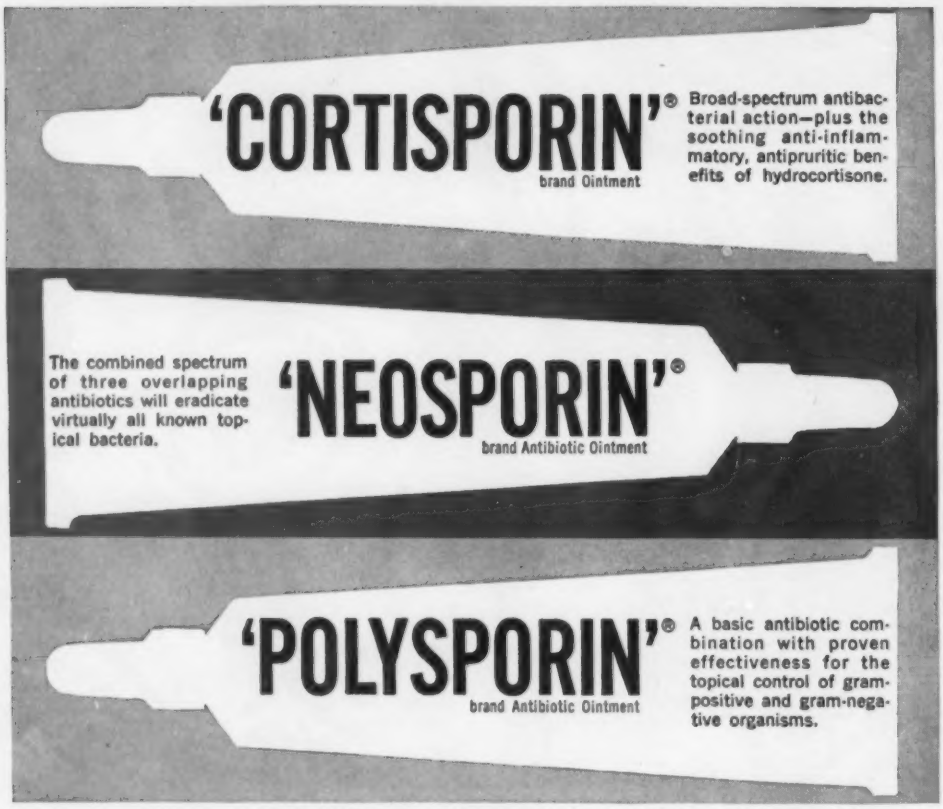
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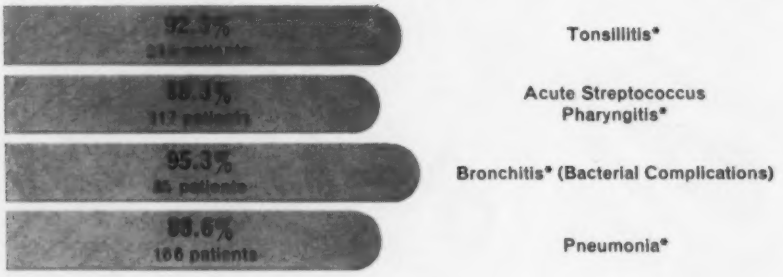

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Indications

PAUL Y. TAMURA, M.D.,† and
W. HAROLD CIVIN, M.D.,‡ Honolulu

IN MARCH OF 1958, The Queen's Hospital acquired the Kolff Twin-coil Artificial Kidney (Travenol), and a few months later (June) a patient in advanced renal failure was dialyzed. The result was dramatic. The dulled sensorium cleared and the blurred vision disappeared, as did the twitching, nausea, and vomiting. However, it wasn't long before this patient deteriorated, first chemically, then clinically, and died in a matter of several weeks. This case illustrated the potentiality of the machine and, at the same time, its limitations.

Bauer

DR. TAMURA

The artificial kidney (nephromime) is a machine designed to correct the chemical abnormalities in the blood by dialysis through a semipermeable membrane. The nephromime we acquired is but one of several types of machines available. Details regarding this and other nephromimes, including technical aspects, are discussed elsewhere.[2] To date, 40 dialyses have been performed on 25 patients at this hospital. Only rare and minor technical problems were encountered.

It is our impression that many physicians are confused about indications for the use of this therapeutic tool. The voluminous literature from various centers gives the impression that there are major differences of opinion among the authorities in the field.[3] For this reason, we are presenting this problem in the light of our own experience with the hope that we may help clarify the situation rather than add to the confusion.

* It has been suggested by van Bergeijk that the suffix—*mime* (from Greek stem $\mu\iota\mu\eta$ = imitate, as in pantomime) be used for man-made devices which simulate biologic function. The suffix is attached to the stem of the word that designates the organ being simulated. Thus, *nephromime* for artificial kidney, *cardiomime* for cardiotron, *neuromime* for transistorized artificial neurons, etc.[1]

† Associate Director of Laboratories.
‡ Director of Laboratories, The Queen's Hospital.
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[1] van Bergeijk, W. A.: Nomenclature of devices which simulate biologic functions, Science 132:1248 (Oct. 28) 1960.

[2] (a) Kolff, W. J.: The artificial kidney; past, present, and future, Circul. 15:285 (Feb.) 1957. (b) Merrill, J. P.: Medical progress: The artificial kidney, New Engl. J. Med. 246:17 (Jan. 3) 1952. (c) MacNeill, A. E., Witebsky, E., and Swanson, P. R.: Unusual hemolytic transfusion reaction with renal failure treated by hemodialysis, J.A.M.A. 161:1630 (Aug. 25) 1956. (d) Skeggs, L. T., Jr., Leonards, J. R., and Heisler, C. R.: Artificial kidney. II. Construction and operation of an improved continuous dialyzer, Proc. Soc. Exper. Biol. & Med. 72:539 (Dec.) 1949. (e) Maher, F. T., and Broadbent, J. C.: Extracorporeal hemodialysis in the management of acute renal failure, J.A.M.A. 166:608 (Feb. 8) 1955. (f) Kupfer, S., and Rosenak, S. S.: A new parallel tube continuous hemodialyzer, J. Lab. & Clin. Med. 54:746 (Nov.) 1959.

[3] Salisbury, P. F.: Timely versus delayed use of the artificial kidney, A.M.A. Arch. Int. Med. 101:690 (Apr.) 1958.

General Considerations

Before considering the indications as such, preliminary remarks regarding safety, expense, and general philosophy will be made.

Safety

It is our opinion that, with the basic knowledge of the technical aspects of the machine on one hand, and an understanding of the over-all problems of hemodynamics of the circulatory system on the other, the procedure is safe and effective in correcting uremia or other chemical abnormalities in the blood. The ultimate result depends upon the status of the patient's kidneys and other vital organs. In other words, the underlying medical or surgical disease may kill the patient but, in using the nephromime, the goal is to prevent chemical abnormalities from doing it first.

Expense

The average charge of $300-350 per dialysis, in the beginning, seemed excessive. When one considers the personnel involved, the material used, (coil, chemicals, solutions, medications, etc.), and laboratory determinations, the cost to the hospital is greater than the charge, the difference being assumed by the hospital. The total cost to the patient (and the hospital) of preventive or prophylactic daily dialysis could be staggering. In this instance, the use of a different dialyzer (such as the Collins-MacNeil type of nephromime) can reduce the cost substantially.

On the other hand, nondialyzed cases may incur heavy expenses resulting from prolonged hospitalization and complications such as infection. We have heard of a patient with acute tubular necrosis who was not dialyzed and who struggled through a period of rather fantastic diuresis, thereby incurring tremendous expense due to extended hospitalization. It is our opinion that the expense of the procedure should not be a serious consideration alongside of clear-cut indications for dialysis.

Philosophy Regarding the Use of the Nephromime

Generally speaking, authorities agree that dialysis is of value in cases of reversible renal disease and of limited or no value in the irreversible conditions. Often the diagnosis is not clear-cut because one cannot be absolutely certain of the diagnosis without renal biopsy. Thus, cases are divided into "potentially reversible" and "irreversible" categories. Yet, in an anuric or oliguric patient with potentially reversible disease, no two experts may agree as to when, if at all, dialysis should be performed.[4] In fact, this is the area of disagreement. It stems from differences in the basic philosophy regarding the procedure.

One group feels that with the improved management of today, cases of acute anuria seldom require dialysis. They speak of "conservative" management in contradistinction to the use of the nephromime. This expression certainly implies that the use of this machine is radical. However, its use has increased tremendously, and trained and experienced personnel are likewise more available. The term "conservative" has now outlived its usefulness and the ill effects of its use are now felt. The use of the nephromime and "radical" therapy have become synonymous in the minds of many physicians. They feel that the people who use this machine consider it a substitute for good medical therapy.

Nothing can be further from the truth. The nephromime is part of good medical therapy and its use depends upon the individual case and conditions involved. For example, we feel it is foolish and inexcusable to avoid or even delay use of the nephromime in a case of severe barbiturate intoxication. Others feel that cases of acute anuria should be dialyzed if there is clear-cut chemical and clinical evidence of uremic deterioration. Still others believe in dialysis before development of severe uremic symptoms,[5] and even daily, on a prophylactic basis.[6]

Indications

The cases in which the nephromime may be indicated can be divided into certain major categories:

I. Acute intoxications
II. Acute tubular necrosis
III. Primary renal diseases
IV. "Hepatorenal syndrome," (so-called)
V. Metabolic (diabetic) acidosis with renal insufficiency
VI. Iatrogenic fluid and electrolyte imbalance

Acute Intoxications

Acute intoxications include cases of poisoning by barbiturates, Doriden, bromides, salicylates, and other drugs.[7] Excluding nephrotoxic poisons, the prognosis depends mainly on dosage and duration

[6] (a) Salisbury.[5] (b) Franklin, S. S., and Merrill, J. P.: Medical Progress: Acute renal failure (concluded), New Engl. J. Med. 262: 761 (Apr. 14) 1960. (c) Kolff, W. J.: Dialysis in the treatment of uremia, Dept. Med. Surg., TB 10-97, V. A. Tech. Bull. Wash. 25, D. C., p. 11, 1954.

[5] (a) Salisbury.[5] (b) Kelemen, W. A., and Kolff, W. J.: Use of artificial kidney in the very young, the very old, and the very sick, J.A.M.A. 171:530 (Oct. 3) 1959. (c) Teschan, P. E., O'Brien, T. F., and Baxter, C. R.: Prophylactic daily hemodialysis in the treatment of acute renal failure, Surg. Forum 10:362, 1960. (d) Maher, and Broadbent.[5a] (e) Kiley, I. E., Powers, S. R., Jr., and Beebe, R. T.: Acute renal failure: eighty cases of renal tubular necrosis, New Engl. J. Med. 262:481 (Mar. 10) 1960.

[6] Teschan *et al.*[5c]

[7] Schreiner, G. E.: The role of hemodialysis (artificial kidney) in acute poisoning, A.M.A. Arch. Int. Med. 102:896 (Dec.) 1958.

TABLE 1.—*Diagnosis of Acute Tubular Necrosis*

A. PREDISPOSING FACTORS—usually various states associated with circulatory failure.
- Medical:
  - Nephrotoxins—carbon tetrachloride, mercury, ethylene glycol.
  - Mismatched transfusions.
  - Diabetic acidosis (unusual).
  - Various conditions associated with circulatory insufficiency such as CVA, myocardial insufficiency, esophageal varices and hemorrhage, etc.
- Obstetrical:
  - Criminal abortions—mechanically or chemically induced.
  - Ante-partum & post-partum hemorrhage—afibrinogenemia associated with abruptio placentae, amniotic fluid embolism, etc.
- Surgical:
  - Postoperative—especially vascular surgery.
  - Burns.
  - Trauma.

B. CLINICAL CRITERIA
- Diminished volume of urine
  - I.V. infusion 250 to 500 cc—caution.
  - Vasopressin concentration test.
- Urinary changes
  - Specific gravity tends to be low.
  - Osmolarity tends to be low.
  - Urea low.
  - Sodium elevated.
- Blood urea elevation, progressive rise

of intoxication. We had nine cases of barbiturate intoxication with one death. The latter illustrated the importance of avoiding undue delay, since prolonged anoxia or circulatory collapse may lead to irreversible central nervous system damage. We have not encountered such a case. In one case associated with prolonged shock, acute tubular necrosis became one of the troublesome complications.

When clinical evidence points to drug intoxication, especially with a history of having had the drug prescribed or the finding of partially or completely emptied drug containers, preparations for dialysis should be initiated while studies are in progress. We feel that a patient in deep coma should be tracheotomized. Furthermore, it is felt that nothing is to be lost and much is to be gained by not waiting for the time-consuming qualitative and quantitative barbiturate determination. An adequate qualitative determination takes at least 45 minutes to one hour. Further complicating identification is the fact that more and more combinations of drugs are being used.

It is stated that dialysis is of limited value in poisoning by Seconal and other short-acting barbiturates because these drugs dialyze poorly.[4c] Schreiner points out the importance of dialyzing such cases and with this we agree. The Queen's Hospital Laboratory has followed barbiturate intoxications assiduously. In one instance, 930 mg. of Seconal was removed. This is equivalent to about ten 1½ grain capsules, an amount which unquestionably could and probably did spell the difference between life and death. This patient survived.

It is generally accepted that good nursing care is of paramount importance in comatose cases. While these cases are being brought out of coma by dialysis, good nursing care is assured because a team of physician (or physicians), nurse, and technician is in constant attendance.

The duration of dialysis has not been limited to six hours but is timed according to the response (or lack of response) of the patient. One case was dialyzed for 31 hours over a period of three days. Seventeen hours was the longest period for a single dialysis.

Acute Tubular Necrosis

Acute tubular necrosis is also referred to as acute hypoxic nephrosis, lower nephron nephrosis, or acute anuria. It is a complication of a wide variety of conditions including traumatic accidents, surgical procedures, burns, and innumerable medical and obstetrical conditions in which shock or circulatory collapse may occur. In this category might also be included nephrotoxic poisons such as mercury and others[7] (Table 1-A). There is a significant mortality associated with this condition, particularly in the older age groups and with associated trauma.[8] Although the condition is referred to as acute anuria, complete urinary suppression is not the usual situation. When such does occur, it is referred to as total or complete anuria and a more serious condition, renal cortical necrosis, should be considered.[9]

Early recognition of the condition is very important but sometimes difficult[10] (Table 1-B). Reduced volume of urinary output (oliguria) is one of the manifestations. Invariably, the question arises whether this represents dehydration or reduced blood volume, or some other cause of circulatory insufficiency, rather than acute tubular necrosis. A small intravenous infusion, up to 500 cc, will improve urinary output if low blood volume was at fault. A vasopressin concentration test may be used with caution.[11]

Changes in urinary composition occur. In a normal person, urea is the major contributor to the solute load and sodium excretion is practically nil, but this relationship is reversed in tubular

[8] Kiley *et al.*[5c]

[9] Wells, J. D., Margolin, E. G., and Gall, E. A.: Renal cortical necrosis—clinical and pathologic features in 21 cases, Am. J. Med. 29:257 (Aug.) 1960.

[10] Franklin, S. S., and Merrill, J. P.: Medical Progress: Acute renal failure, New Engl. J. Med. 262:711 (Apr. 7) 1960.

[11] Horne, S. F., and Morris, L. M.: Use of posterior pituitary extract (pituitrin) to measure renal function, Am. J. M. Sc. 213:68 (Jan.) 1947.

disease. Thus, the specific gravity and osmolarity of the urine tend to be low in the latter. Low solute concentration, however, does not necessarily indicate a severe renal lesion, since blood flow, glomerular filtration rate, urine flow and solute, and sodium excretion are decreased during and shortly after operations.[12] Impaired concentrating ability can be demonstrated in the postoperative state by the presence of low urine osmolarity, but this is transient in most instances.[12] A rise in BUN is not always a reliable gauge of tubular damage, because this can occur with dehydration or gastrointestinal bleeding; however, a progressive persistent rise is significant. The greater the increment, the more serious the disease, and the better the correlation with symptoms.[13]

At this point, after the condition is recognized, good medical management becomes paramount.[14] The patient should be managed with strictest attention to fluid intake. There is no excuse for the attitude that "the nephromime will get us out of trouble if we overload the patient." The pathophysiology involved is complex and does not lend itself readily to simplification.

A patient in anuria should be followed closely as to weight. There should be a weight loss from 0.2 to 0.5 kg daily.[4b] If not, the patient is probably accumulating an excess of fluid. Daily fluid intake should be limited to a basic maintenance figure of 400 cc to take care of insensible loss, with gastrointestinal, vascular, or renal losses to be replaced in addition.[15] Among other therapeutic measures, high-caloric low-protein intake[16] and prevention of infection are important.

The question of dialysis arises because chemical abnormalities develop. As the condition progresses, clinical symptoms may also appear. When should such a patient be placed on the nephromime? The chemical aberrations can be followed to indicate the progression and severity, or improvement of uremia. But it does not behoove us to be dogmatic, since chemical changes may not correlate with clinical findings (Table 2). Most clinicians feel that the latter are more reliable in indicating severe uremia.[17]

TABLE 2.—*Immediate Indications for Dialysis in Uremia*

Biochemical:	
K:	6.5 mEq. or more
BUN:	150 mgm/100 ml
CO_2:	12 mEq.
Clinical:	
Mental changes, drowsiness, confusion	
Excessive vomiting	
Pulmonary edema	
Pericardial friction	

We have noted that perhaps more important than any single criterion is the basic philosophy of the clinician in charge of the case. This aspect has been covered above under general considerations. One case of severe crush injury in renal shutdown was treated with eight dialyses on consecutive days. This patient recovered from the renal shutdown only to succumb to infection by bacteria resistant to all antibiotics. Nevertheless, this case impressed us with the value of early and frequent dialysis, before the serious signs and symptoms of uremia appear. There is no reason why dialysis cannot be planned ahead of time instead of being reserved for complications. Frequently the latter occur at hours when personnel are not readily available. The delay which results may be to the detriment of the patient.

We cannot dismiss this aspect of the discussion without a word about the "diuretic phase." In a patient whose output has been a few cubic centimeters of urine, an increment of a hundred or more cubic centimeters is encouraging. It must be emphasized that the patient should be watched even more closely because uremic deterioration continues and preventable deaths can and do occur.[18] Actually, we do not consider the patient to be in the diuretic phase until he puts out sufficient urine to prevent the accumulation of the products of metabolism. Because the renal function improves only gradually, the volume required to accomplish this is between 1000 and 1500 cc. In other words, a patient with 800 cc urinary output should not be considered "out of the woods" if the nitrogenous products continue to accumulate and if chemically or clinically he continues to deteriorate.

Renal cortical necrosis is considered to be relatively uncommon, though the true incidence is difficult to determine.[19] In life, this can be suspected[9] but not definitely established without renal biopsies.[20] Without biopsies, this condition

[12] Gullick, H. D., and Raisz, L. G.: Changes in renal concentrating ability associated with major surgical procedures, New Engl. J. Med. 262:1309 (June 30) 1960.

[13] (a) Kelemen, W. A., and Kolff, W. J.: An evaluation of the management of acute renal failure with dialysis, Arch. Int. Med. 102:871 (Dec.) 1958. (b) Goldring, W., Moderator; Chasis, H., Merrill, J. P., Riley, C. M., and Schreiner, G. E.: Panel meet. Oct. 15, 1958, N. Y. Acad. Med., Bull. N. Y. Acad. Med. 36:662 (Oct.) 1960.

[14] (a) Merrill,[2b] (b) Franklin and Merrill,[4b] (c) Kolff,[4c] (d) Kelemen, W. A., and Kolff, W. J.: Evaluation of dialysis in treatment of chronic renal failure: study of twenty-eight cases treated in one year, A.M.A. Arch. Int. Med. 106:608 (Nov.) 1960. (e) Swann, R. C., and Merrill, J. P.: Clinical course of acute renal failure, Medicine 32:215 (May) 1953. (f) Merrill, J. P.: The treatment of renal failure. Therapeutic principles in the management of acute and chronic uremia, New York, Grune, 1955.

[15] (a) Kiley *et al.*,[5a] (b) Franklin and Merrill.[4b]

[16] Kolff, W. J.: Forced high caloric, low protein diet and the treatment of uremia, Am. J. Med. 12:667 (June) 1952.

[17] (a) Salisbury,[3] (b) Franklin and Merrill,[4b] (c) Kelemen and Kolff.[13a]

[18] Swann and Merrill.[14f]

[19] Lauler, D. P., and Schreiner, G. E.: Bilateral renal cortical necrosis, Am. J. Med. 24:519 (Apr.) 1958.

[20] (a) Wells *et al.*,[9] (b) Lauler and Schreiner,[19] (c) Brun, C., and Raaschou, F.: Kidney biopsies, Am. J. Med. 24:676 (May) 1958, (d) Boucot, N. G., Guild, W. R., and Merrill, J. P.: Bilateral renocortical necrosis with recovery: report of a case, New Engl. J. Med. 257:416 (Aug. 29) 1957.

is likely to be classified as acute tubular necrosis. If all cases of acute anuria were to be biopsied, more cases of this condition would probably be found. Sheehan and Moore[21] in a series of autopsies showed that partial or patchy destruction of the renal cortex can occur. While the course in this condition is considered to be rapid and fatal, and while only a few cases of recovery have been reported,[22] the concept of partial involvement of the renal cortex would appear to justify the inclusion of such an entity among the potentially reversible group which might be helped by dialysis.

Primary Renal Diseases

There were 543 autopsied cases at The Queen's Hospital in a two-year period, 1958 to 1960, and of these 106 were newborns or stillbirths. The majority of autopsied cases were in the higher age group, with nearly 40% showing arterial and arteriolar types of vascular involvement. Almost two-thirds showed some type of renal pathology. Multiple diseases of the kidney occurred in 69 (13%). Renal failure occurred in 84. With advancing age, aggressive surgery, including procedures on the cardiovascular system, causes secondary renal involvement and failure to assume an important place. We had 11 cases in this category and all were classed pathologically as acute tubular necrosis. Failure to anticipate and recognize this disorder resulted in excessive administration of fluid and blood in many of these cases, with resulting cardiovascular failure and fluid and electrolyte imbalance.

Acute glomerulonephritis is quite uncommon. The one case encountered at The Queen's Hospital was diagnosed microscopically after autopsy in a patient who died from multiple unrelated causes. Dialysis has been advocated as part of the well-planned management of these cases,[23] but it is seldom necessary except when overhydration or over-administration of saline has occurred.[13b] It is said to be of doubtful value in subacute glomerulonephritis. We had no case in this category. In chronic glomerulonephritis, the outlook is generally poor, as it is in most cases of chronic uremia.[24] Such patients sometimes become more or less stabilized at a new high level and remain so until an intercurrent obstetrical, surgical, or medical condition brings about deterioration.[24a] Dialysis may help these cases. Certainly, these patients should be dialyzed preoperatively. In a long standing case of progressively deteriorating chronic nephritis, one should not expect too much, and certainly no optimistic prognosis should be made to the family. In our ten chronic uremics dialyzed, the improvement, while definite and occasionally dramatic, was temporary. Whether or not this justifies the cost is, we believe, an individual philosophical question. One family was grateful for the opportunity of having their previously comatose mother home in reasonably good condition to enjoy their last Christmas and New Year holidays together.

Keleman and Kolff found dialysis worthwhile in 39% of their dialyzed cases.[24b] Of the chronic renal conditions, cases of polycystic disease have had the best results.[24c] This was illustrated to us in one such patient who had come to Hawaii as a "dying wish." After two dialyses, he was able to enjoy the remaining days of his stay in Hawaii and when last heard from several months later, he had returned to his occupation in New York in apparent good health.

We have employed multiple dialyses in preference to a single procedure in chronic cases. In one patient, after a short period of marked improvement, convulsive seizures and unconsciousness suddenly occurred. After three days of sedation, the patient awoke without neurologic sequelae. This case made us wonder if rapid reversion to normal blood chemistry was not responsible for the episode. Thus, we have shortened the first run to three hours. We find, however, that we still remove up to 90 g of urea during this short period.

The total quantity of urea removed, we concede, is not in itself a significant figure. It varies widely from patient to patient. For lack of a better yardstick, however, we have utilized it as a rough measure of the effectiveness of the machine. For what it is worth, we have noted that with shorter periods of dialysis, the patient has less discomfort and muscle-aching afterward and is more willing to return for repeat dialysis. Certainly, here as in other indications, a few hours of dialysis are equivalent to many days or weeks of difficult management.[24b]

Before denying a patient an effective therapeutic measure, it is important to be sure of the diagnosis, and this is where renal biopsies are particularly indicated. Discrepancy between the clinical and pathological diagnoses occurs often enough to fully justify this diagnostic procedure, not only here but in other renal conditions.[20c] Where question of diagnosis still exists, the patient should be given the benefit of the doubt.

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[21] Sheehan, H. L., and Moore, H. C.: Renal cortical necrosis and kidney of concealed accidental hemorrhage, Springfield, Ill., Thomas, 1953.

[22] (a) Lauler and Schreiner,[19] (b) Boucot *et al.*[20d]

[23] Anderson, A., and Kolff, W. J.: Artificial kidney in the treatment of uremia associated with acute glomerulonephritis (with a note on regional heparinization), Ann. Int. Med. 51:476 (Sept.) 1959.

[24] (a) Goldner, F., Gordon, G. L., and Danzig, L. E.: Use of artificial kidney in chronic renal disease, A.M.A. Arch. Int. Med. 93:61 (Jan.) 1954. (b) Kelemen, W. A., and Kolff, W. J.: Evaluation of dialysis in treatment of chronic renal failure: study of twenty-eight cases treated in one year, A.M.A. Arch. Int. Med. 106:608 (Nov.) 1960. (c) Nakamoto, S., and Kolff, W. J.: Chronic uremia due to polycystic renal disease treated with the artificial kidney, A.M.A. Arch. Int. Med. 101:921 (May) 1958.

Hepatorenal Syndrome

Some deny the existence of the so-called "hepatorenal syndrome." Nevertheless, there is a group of cases where renal and hepatic insufficiency co-exist. The former possibly results from circulatory failure, reduced glomerular filtration rate and possibly pressure on the hepatic vein by ascites associated with advanced hepatic disease such as cirrhosis. In one study,[25] biopsies revealed changes similar to acute tubular necrosis. The renal changes might therefore be considered reversible. There are oliguria and rising blood urea nitrogen as well as ammonia intoxication.

We had one case in this category who did not benefit from dialysis. However, many feel that dialysis in these cases should be considered to prevent death from renal insufficiency.

In hepatic insufficiency, dialysis is seldom indicated except in those cases associated with massive gastro-intestinal bleeding and rapidly developing ammonia intoxication.[26] The outlook in this group of cases, generally speaking, is poor.

Metabolic (Diabetic) Acidosis with Renal Insufficiency

Renal shutdown may co-exist with diabetic acidosis and preclude correction of the electrolyte imbalance by parenteral fluid therapy. Dialysis would then be imperative.[27] Renal insufficiency associated with intercapillary glomerulosclerosis is included in the category of chronic uremias. Our case showed improvement lasting only about one week.

Iatrogenic Fluid and Electrolyte Imbalance

In the past decade, with rapid strides in the understanding of fluid and electrolyte balance, the management of cases of anuria has likewise improved. It is the experience of most centers that referrals of grossly mismanaged cases have decreased substantially. However, overhydration, overdose of potentially lethal drugs, and unexpected electrolyte imbalance do occur, and dialysis may be a life-saving procedure in these situations.

We had a case with hyperkalemia (iatrogenic) and congestive failure due to rheumatic heart disease. We feel that dialysis in this case was life-saving. She subsequently developed renal shutdown which even continued nine days postdialysis. Repeat dialysis was not performed because the patient was doing "exceptionally well."

Dialysis has recently been advocated for correction of fluid and electrolyte imbalance in intractable cases of congestive heart failure.[28]

Conclusion and Summary

The nephromime is no longer merely a research tool and should be considered a valuable part of the medical and surgical therapeutic armamentarium. Judging from our series of cases, more than one such unit in an area such as Hawaii is probably not necessary. There is little doubt as to the importance of that single unit, however. Without it the outcome in many cases, particularly the intoxications, would probably have been fatal. Operated by properly trained personnel, the machine is safe and effective.

A major problem has been to determine the indications for the use of this machine. We have tried to present our view in the light of our experience and that of others in this field. Renal failure per se is not an indication for the use of the machine.

In general, patients with reversible renal involvement are ideal for dialysis. In this group might be placed the acute intoxications. Here the avoidance of delay is of paramount importance. In other conditions, since it is not possible to be certain clinically, the patients are classified as either "potentially reversible" or "irreversible." In the former group, we favor earlier and more frequent dialysis.

The nephromime is not a substitute for, but an integral part of, good medical therapy.

Acknowledgements

We are grateful to Dr. W. J. Kolff and his staff at the Cleveland Clinic, Cleveland, Ohio, and to Dr. W. A. Kelemen, formerly of the Cleveland Clinic, for their invaluable assistance and advice which made the setting up of the nephromime at The Queen's Hospital a less formidable task.

It would not be possible to acknowledge all who have helped us locally, for we have drawn freely upon the personnel from the different departments of The Queen's Hospital and from the attending medical and surgical staff members. However, much credit is due to two capable physicians, Drs. Hyman Fisher and Emiko Sakurai Hirschy, formerly residents in internal medicine and clinical pathology, respectively. Their attention to countless details has been in evidence with each dialysis.

[25] Lassen, L. A., and Thomsen, A. C.: The pathogenesis of the hepatorenal syndrome, Acta med. Scandinav. 160:165 (Mar. 7) 1958.
[26] Kiley, J. E., Pender, J. C., Welch, H. F., and Welch, C. S.: Ammonia intoxication treated by hemodialysis, New Engl. J. Med. 259:1156 (Dec. 11) 1958.
[27] Aoyama, S., and Kolff, W. J.: Severe diabetic acidosis treated with the artificial kidney: report of a case complicated with acute renal failure, J.A.M.A. 166:9 (Jan. 4) 1958.
[28] Lemmon, W. M., Hirose, T., O'Connor, R. A., and Bailey, C. P.: Congestive heart failure—relief by renal dialysis, J.A.M.A. 174:54 (Dec. 24) 1960.

An internist familiar with the nephromime reports on 25 cases in which it was used

Experiences with the Artificial Kidney at The Queen's Hospital

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THE KOLFF disposable twin-coil kidney[1] was first used at The Queen's Hospital on June 10, 1958. Through December, 1960, 40 extracorporeal hemodialyses were carried out on 25 patients (Table 1). Pertinent laboratory data are tabulated (Tables 2 and 3). From the technical standpoint, it should be emphasized that the "kidney" was found to be simple, safe, and effective.

Simple

No complicated manipulation of electrolytes is necessary. The patient's blood passing through the coils equilibrates with a voluminous bath, the electrolyte composition of which approximates that of normal extracellular fluid. In this respect, the "kidney" is more like a placenta than a kidney. Usually, only two things are varied: K^+ may be kept low in hyperkalemia; invert sugar may be increased for several reasons: (1) to counteract the osmotic pull of urea, (2) to provide high glucose concentration to combat endogenous protein catabolism, or (3) to remove water osmotically.

Safe

No trouble with volume shifts has occurred. The blood pump is started slowly and raised gradually to the normal speed. Blood pressure fluctuations have been minimal at the beginning of the "run." Under usual operating conditions, the coils hold a constant volume of blood.[2] The flow rate is 200 ml/min, so free breaks in the main lines, e.g., separation at connections, could be disastrous. But, for the same reason, rapid transfusion is possible. A slow leak from the coils would not necessarily be dangerous.

Effective

As noted in Table 2, large amounts of urea are removed. The usual run lasts six hours with bath changes every two hours. Some patients with chronic renal failure are dialyzed twice, two days apart, the first dialysis lasting three hours with a bath change at 1½ hours. Even with the shorter run, as much or more total urea is removed because of the initial high urea concentrations. Apparently the "kidney" removes urea from the blood faster than the tissues can release it to the blood. Considerably less urea is removed with each successive bath. Because of diminishing returns, the standard run has come to be limited to six hours. The BUN rises immediately after cessation of dialysis. Therefore, in chronic uremics, urea is allowed to re-equilibrate, then a second run of six hours is performed. In highly catabolic patients, longer runs may be done, with successive baths continuing to yield much urea.[3] If the rate of shift of urea is taken as 100, that of K^+ is 100, HCO_3^- 55, and glucose 40.[4]

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Bauer

With drug poisoning cases, bath changes are necessary only every three hours. However, dialysis is maintained as long as technically possible

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[1] Kolff, W. J., Watschinger, B., and Vertes, V.: Results in patients treated with the coil kidney (disposable dialyzing unit), J.A.M.A. 161:1433 (Aug. 11) 1956.

[2] Tu, W. H.: A study of hemodynamics of the twin coil artificial kidney. The relationship of perfusion rate and blood volume within the coil, Trans. Am. Soc. for Artif. Int. Organs 6:2, 1960.

[3] Schreiner, G. E.: Personal communication.

[4] Kolff, W. J.: The artificial kidney—past, present, and future, Circulation 15:285 (Feb.) 1957.

TABLE 1.—*Types of cases.*

	CASE NO.	NO. OF RUNS	OLIGURIA (less than 400 ml/24 hrs)	FEVER (100° or more immed. after dialysis)	SURVIVAL AFTER FIRST DIALYSIS	AUTOPSY
Acute uremia, 5						
Surgical, 2						
Post-op, repair of dissecting aneurysm...	9	3	*	none	5 days	yes
Severe crush injuries...	22	8	*	*	5½ weeks	yes
Medical, 3						
Congestive heart failure 2° pneumonia..	15	1	none	10 days*	3 weeks	no
Septicemia 2° E. coli pyelonephritis.....	18	1	none	10 days*	living	
Hepato-renal syndrome...	11	1	none	till death	5 days	no
Electrolyte imbalance, iatrogenic...	14	1	*	2 days	living	
Chronic uremia, 10						
Chronic glomerulonephritis, 5...	2	1	none	none	5½ weeks	yes
	10	2	none	none	2 weeks	no
	16	1	none	2 days	2 weeks	no
	17	1	none	only eve of dialysis	4⅔ months	no
	21	1	relative decr, 2 days	1 day	2 months	yes
Chronic pyelonephritis...	1	1	2 days	1 day	5 weeks	yes
Chronic glomerulo- and pyelonephritis.....	6	2	none	none	3½ months	yes
Chronic, unspecified...	5	2	none	none	few weeks	no
Kimmelstiel-Wilson and arteriolar nephrosclerosis...	12	1	4 days	none	4½ weeks	yes
Congenital polycystic...	7	2	none	2 days after 2nd run	living	
Poisonings						
Barbiturates, 9...	3	1	2 days	7 days	living	
	4	1	*	till death	2½ days	Coroner's
	8	1	none	4 days	living	
	13	1	none	3 days	living	
				2 more days, slight		
	19	1	none	2 days	living	
	20	1	none	none	living	
	23	3	*	3 days (dialyzed each day)	living	
	24	1	none	½ day	living	
	25	1	1 day	4 days	living	

* from primary condition.

or until the patient shows signs of definite improvement.

Administrative Problems

The project was initiated by Paul Y. Tamura, M.D., of The Queen's Hospital, Department of Laboratories, with the help of medical residents assigned to that service. Dr. Tamura helped to monitor the earlier cases but could not be expected to take over the clinician's role. Opportunity to become familiar with the technique has been available to all physicians on the staff.

Originally, a consultation with a member of the Artificial Kidney Committee was required to decide on dialysis of a given patient. Practically all of the proposed cases were chronic ones, and after the first two such cases, very few others were approved. Eventually the attitude against running chronic cases was relaxed and medical residents were able to become proficient in supervising dialyses. Later, we began to dialyze patients without seeking approval of a member of the Artificial Kidney Committee. At times of shortage of qualified residents, it was feared that this bypassing of proper referrals would leave the technician in the position of being forced to assume undue responsibility. Furthermore, the personnel of the Department of Laboratories often found themselves being asked to make clinical decisions regarding the feasibility of dialysis in a given case.

The Department of Laboratories has referred all problems to qualified clinicians. It was at times awkward to insist on a consultation when only one clinician was thoroughly familiar with technical aspects, but now, more physicians are showing interest in learning the procedure.

Cannulations

In an elective dialysis, cut-downs should be made about one hour previously in the operating

TABLE 2.—*Laboratory data.*

CASE NO.	BUN MG%		UREA REMOVED, IN GRAMS		CO_2 mM/1		K^+ mEq/1	
	before	after	total	per bath	before	after	before	after
1	195	38	73	(62.3, 6.4, 4.3)	12.7	26.2	4.3	4.8
2	206	26.5	102.8	(57.8, 30.6, 15.4)	<9	24.4	3.6	6 sl hemolyzed
5	185	89.5	85.5	(46.2, 39.6)*	14	25.3	5.1	3.9
	118	40	77.9	(33.8, 27, 17.1)	19	25.7	5	5.5
6	225	73.5	83.7	(36.4, 26.3, 21)*	<10	13.5	5.2	
	112.5	26.5	58	(29.7, 18.2, 10.1)	<10	24.8	3.5	4.6
7	219	142	80.7	(49.9, 30.8)*	<9	28.4	4.9	3.9
	150	51.5	101	(46.2, 30.8, 24)	11.3	22.1	5.2	4.6
9	142	65.5	80	(41.1, 25.7, 13.3)	14	20.8	3.2	4.8
	179	108	66.1	(35.3, 21.8, 9)	19	21.7	7.4	5.4
	165	68	96.3	(34.9, 34.2, 27.2)	14.9	24.4	8.1	5
10	233	116.5	96.1	(51.4, 44.7)*	16	22.4	3.4	3.8
	128	52	88.6	(34.9, 28.7, 25)	14.5	24.8	4	4.3
11	87	45.5	72	(25, 21.6, 15.4)	20.8	20.8	4.5	5.4
12	118.5	33.5	68.5	(30.2, 22.5, 15.8)	11.3	16.7	5.1	4.8
14	70.5	17.5	36.2	(18.4, 10.5, 7.3)	13	23	9.2	4.9
15	248	70	107	(40.7, 38.9, 27.4)	11.7	19	6.8	4.6
16	137	48.5	95	(37.2, 32.1, 25.7)	14.5	22.1	4.1	4.5
17	88	27.4	55.8	(19, 21.2, 15.6)	13.5	23.5	4.7	4.6
18	103	14.5	57	(21.2, 20.8, 15)	<9	27.1	4.9	5.6
21	205	97.5	106.1	(34.2, 36, 36)	10.8	18.5	5.9	4.6
22	81	53.5	51.6	(19.5, 16.1, 16.1)	15.8	17.6	5.9	4.7
	118.5	75	77.7	(31.7, 27.8, 16.1)	14.9	17.2	5.2	4.7
	123	100	62.2	(25.5, 26.1, 10.7**)	14	16.3	5.5	4.9
	156	109.5	112	(29.7, 30.6, 26.1, 26.8)†	10	17.6	5.7	no data
	174	103	92	(34.9, 28, 28.9)	<9	21.7	6.2	4.5
	187.5	123	106.4	(no data)‡	15.4	19	5.4	4.4
	145	112.5	91	(32.1, 34.2, 24.6)	12.7	20.3	6	5
	164	105	94	(27.6, 28.9, 37.5)	13.8	19.4	6.3	3.7

* 3 hour run, 2 baths of 1½ hours each, or 3 baths of 1 hour each.
** Last 2 hour run on 1 coil.
† Extra 2 hour run.
‡ 7 hour total run.

room so that troublesome and messy oozing, as a result of subsequent heparinization, will be minimal. If, as may happen under emergency conditions, an adequate vessel is not located on initial exposure, a break in sterile technique often occurs in changing of operative sites. Even with strict care, when cannulas are kept in place retained for prolonged, multiple dialyses, cut-down sites usually become infected.[5]

In the Queen's Hospital procedure, the blood is usually removed from the femoral vein and returned to the patient via the brachial vein. Our only difficulty has been with the return flow. Relative obstruction has resulted when the return cannula has been too small, or when clotting has occurred within the cannula during repeated dialyses. Resultant high outflow pressures necessitate decreasing blood flow rate, cause unnecessary ultrafiltration, and increase danger of coil rupture. In two cases, cannulation of another vessel was necessary. The external jugular vein was resorted to in one, with increased danger of air embolism, and the remaining femoral vein in the other, thus using up a valuable vessel which might have been needed should further dialysis have been necessary.

Before blood pumps were available, the blood ran from the patient's artery back to a vein. Ultrafiltration was not possible. An artery can still be used, and may even be preferable. In one case in which an artery was cannulated, the blood flow was so vigorous that the tubing had to be clamped down proximal to the heparin drip. The patient's blood pressure alone is not sufficient to drive the blood through the twin coils of the "kidney." Between runs in multiple dialyses, the arterial and venous cannulas can be joined with a flow reducer, creating a controlled arteriovenous fistula and al-

[5] Teschan, P. E., Baxter, C. R., O'Brien, T. F., Freyhof, J. N., and Hall, W. H.: Prophylactic hemodialysis in the treatment of acute renal failure, Ann. Int. Med. 53:992 (Nov.) 1960.

lowing the cannulas to remain patent.[6] Even without this special technique, the blood has less tendency to clot in an arterial than in a venous cannula, probably because of continued pulsatile motion within the former. Moreover, an artery that has been used once can be used again proximal to the previous site, since the lumen remains patent.

Despite mechanical buffeting of the red blood cells, hemolysis has not been clinically apparent.

Tracheostomy

With patients in severely depressed states, it is advisable to perform an elective tracheotomy in the operating room, together with the cannulations, rather than later as an emergency procedure. Tracheobronchial toilet is thus facilitated. Unexpected apnea is more readily handled. Physiologic dead space is reduced and Cheyne-Stokes phenomena are lessened or obviated. In an emergency, the surgeon is under a handicap in our crowded kidney room, since instruments are limited to the "pack," lighting is comparatively poor, and bleeding is increased in a heparinized patient. The anesthesiologist is handicapped trying to work through the bars of the bed frame at the head of the bed.

Anticoagulation

Heparin is dripped into the blood as it goes into the "kidney." Clotting time of the blood returning to the patient is maintained at 20-30 minutes to prevent clotting within the coils. The total amount of heparin used has been kept down to 100-150 mg in the usual six-hour run. Eight successive dialyses in a severely injured patient were carried out without trouble from bleeding (case 22). Methods of infusing heparin into the blood entering the "kidney" and protamine into the blood leaving the "kidney" have been described.[5, 7]

Management During Dialyses

Obligatory ultrafiltration may approximate 300 ml/hour, resulting in dehydration with two to six pounds' weight loss during dialysis if fluids are not replaced.[8] In edematous states, if the pressure of the flow leaving the "kidney" is increased to 250 mm Hg, the ultrafiltrate increases to 700 ml/hour, resulting in six to eight pounds' weight loss.[8]

For mild hypotension, small increments of whole blood, 50 ml at a time, may be tried, especially if the patient is anemic or if blood has been oozing from the cut-downs and tracheostomy. The usual vasopressors, metaraminol (Aramine) or levarterenol (Levophed), may be given. For hypertension, hydralazine (Apresoline), pentolinium (Ansolysen), and promazine (Sparine) have been used. Diphenhydramine (Benadryl) and promethazine (Phenergan) have been given for restlessness. Chlorpromazine (Thorazine) and prochlorperazine (Compazine) have been tried for nausea. Unexplained trembling of the extremities resembling chills is occasionally seen early in dialysis. This has usually subsided gradually within a half hour or so.

Post-dialysis Oliguria and Fever

Worrisome oliguria occurred in several patients, both with and without primary renal disease. This has been previously noted, but its origin remains obscure.[4, 8] Unexplained fever was not uncommon and has also been noted by others.[1, 10]

Selection of Cases

Chronic Cases

If a case of chronic renal disease has been followed fairly carefully, and the natural course of the disease is apparent, few internists would propose dialysis. Dialysis should be tried if some complication such as intercurrent infection, excessive vomiting, or other metabolic disturbance is superimposed to a critical degree on existing, more or less stabilized, chronic renal disease.

Critical cases that have had no preceding medical management, once rectified by medical measures with or without dialysis, may be able to carry on for considerable periods. A good renal biopsy specimen may greatly influence decision as to dialysis. "In chronic uremia, a single dialysis may break the spell of continuous vomiting and misery. Six hours of dialysis may be the equivalent of six weeks of difficult, frustrating medical management."[4] Certainly, futile medical therapeutic exercises based on repeated, expensive laboratory tests in known hopeless cases cannot be considered to represent good clinical judgment. It is not easy to predict the duration of improvement after dialysis in chronic cases. Rarely, a surprising relatively long survival results. Nakamoto and Kolff had better than usual survival in a small series of cases in severe or apparently terminal uremia due to polycystic renal disease.[11]

[6] Quinton, W., Dillard, D., and Scribner, B. H.: Cannulation of blood vessels for prolonged hemodialysis, Trans. Am. Soc. for Artif. Int. Organs 6:104, 1960.

[7] Anderson, A., and Kolff, W. J.: Artificial kidney in the treatment of uremia associated with acute glomerulonephritis (with a note on regional heparinization), Ann. Int. Med. 51:476 (Sep.) 1959.

[8] Travenol Laboratories, Inc.: Instruction leaflet with coil dialyzing unit.

[9] Kelemen, W. A., and Kolff, W. J.: Evaluation of dialysis in the treatment of chronic renal failure, A.M.A. Arch. Int. Med. 5:608 (Nov.) 1960.

[10] Kiley, J. E., Powers, S. R., Jr., and Beebe, R. T.: Acute renal failure, N. Eng. J. Med. 262:481 (Mar. 10) 1960.

[11] Nakamoto, S., and Kolff, W. J.: Chronic uremia due to polycystic renal disease treated with the artificial kidney, A.M.A. Arch. Int. Med. 101:921 (May) 1958.

When the "kidney" has not been used for some time and a new group of residents are eager for experience, chronic cases might be dialyzed that otherwise would not. Socio-economic factors cannot be ignored: e.g., a business man may need time to get his affairs in order, or a family of means may desire any prolongation of life, with expenses not to be considered.

Acute Uremia

The chief problem is early recognition so that patients are not "drowned" initially. Laboratory tests on the urine may warn of this by showing decreased volume, isosthenuria, osmolarity approaching plasma values, inability to conserve sodium (usually over 30 mEq/l), or inability to excrete urea so that the ratio of urine urea to blood urea is less than ten.[12] Acute renal shutdown must be anticipated on clinical grounds. Most important to consider is the fact that dialysis is no substitute for good medical management.

The concept of prophylactic hemodialysis has been pioneered by Teschan, the principle being to keep patients out of clinical uremia with its attendant morbidity.[5] We tried this in one case (#22) with apparent technical success.

Poisonings

Our most gratifying experiences have been with cases of suicidal barbiturate ingestion. Our indications for dialysis have been among those enumerated by Schreiner:[13a]

(a) Deteriorating clinical condition: vasomotor instability and shock, cyanosis and respiratory arrest, severe depression with areflexia, etc.

(b) Known ingestion of a potentially fatal amount: three grams for short acting ones, five grams for long acting ones.

Schreiner mentions blood barbiturate levels. Unfortunately, quantitative blood levels have been of no practical help to us, as the determinations could not be done "stat" in our laboratory. It was of interest later to correlate the blood values with the alleged dose and the clinical picture before and after dialysis.

Another indication would have been the existence or the development of any significant medical complication increasing the hazards of prolonged coma. We had no cases in this category.

The "kidney" is more effective in dialyzing long-acting barbiturates, but short-acting ones are also dialyzable to some extent, viz., phenobarbital 40% recoverable, amobarbital 35%, pentobarbital 20%.[13b]

Good nursing, equal to post-surgical care, is most essential. During dialysis, clinical observation of a fluctuating level of depression strongly suggests removal of the drug from the blood and tissues where it is acting, and equilibration in turn with a depot or reservoir. This phenomenon has been stressed by Schreiner in his case reports.[13] Early dialysis, before the depots are saturated, seems logical. The clinical response of the patient determines the length of run. Schreiner mentions a 31-hour run on a Doriden case.[3] We had runs as long as 16 hours (case 23) and 12 hours (case 25).

Case Summaries

#1 46, f.

Chronic pyelonephritis, terminal, with azotemia, hypertension, nausea, and vomiting. After dialysis, clinical improvement was striking (felt "best in six months") but maintained for only a week.

Comment: First actual run on kidney. No preliminary animal trials deemed necessary as Dr. Tamura already had sufficient clinical experience elsewhere. Unqualified technical success, as expected.

#2 10, m.

Three year history of glomerulonephritis. In and out of hospital the first year with nephrotic syndrome. Azotemic with acidosis, anemia, hypertension and congestive heart failure; on digitalis. After dialysis, clinical improvement lasted seven to ten days.

#3, #4, #8, #13, #19, #20, #23, #24, #25 Barbiturate cases; see below.

#5 53, m.

Five year history of renal disease with hypertension. Diabetic for five years; on 20 units of insulin daily. Worked till two months before admission. Uremic syndrome. Dialyzed twice, two days apart. First run, three hours. During second run, Apresoline given for slight rise in BP from 150-160/90-100 to 180-190/100. No cooperation with medical regimen afterwards. Deteriorated rapidly and died.

#6 52, f.

Chronic pyelonephritis. Right nephrectomy ten years before for nonfunctioning hydronephrotic kidney. For three years, pyuria, hematuria, azotemia. Patient deeply comatose and hyperventilating. Dialyzed twice, two days apart. Convulsions two days after second dialysis though no rise in BP. Resultant right hemiparesis cleared in slightly over one month. Two months later, BUN 91 mg%, but anemic, PCV 15%. At 2½ months, BUN 150 mg%. Died at 3½ months.

Comment: Clinical result far better than expected.

[12] Perlmutter, M., Grossman, S. L., Rothenberg, S., and Dobkin, G.: Urine-serum urine nitrogen ratio, J.A.M.A. 170:1533 (July 25) 1959.

[13a] Schreiner, G. E.: The role of hemodialysis (artificial kidney) in acute poisoning, A.M.A. Arch. Int. Med. 102:896 (Dec.) 1958.

[13b] Berman, L. B., Jeghers, H. J., Schreiner, G. E., and Pallotta, A. J.: Hemodialysis, an effective therapy for acute barbiturate poisoning, J.A.M.A. 161:820 (June 30) 1956.

#7 40, m.

Congenital polycystic kidneys, diagnosis based on family history (father, brother, sister, cousin). Had had numerous bouts of gross hematuria. Gradual progression of clinical uremia over a four-month period. Dialyzed twice, two days apart. Right after second run, rise in BP from 140/80-90 to 180/100-108, treated by IM Apresoline. Hallucinated for one day, six days after second run.

Comment: Nakamoto and Kolff[11] report on 13 patients over a five-year period (1952-57), eight severely ill and dialyzed 14 times, two having three dialyses. Of the eight, four were restored to from several months to a year of useful life. They were surprised to find that after dialysis, arterial blood pressure decreased significantly and remained so for at least three weeks in all eight patients.

#9 54, m.

Repair of dissecting aneurysm of aorta with postoperative acute renal failure. Decrease in urinary output after surgery. BP 110-130/70-80. No response to 500 ml of 5% dextrose/water IV in one-half hour. Fluids immediately restricted. Dialyzed three times starting on fourth postoperative day. Second run, two days after first, stopped at 3½ hours because of pulmonary edema. Had received two units of blood (less 200 ml loss from cut-down). Gained 2½ lbs. Digitalized; phlebotomy 350 ml. Next day, third run. Lost 3½ lbs. and seemed less edematous the following morning but later that day, respirations became shallow and irregular, and patient expired. Autopsy revealed patient could perhaps have been saved with further dialyses.

Comment: Reported results are poor for anuria complicating aortic surgery. Recent series, Kiley *et al.*,[10] saved only one out of 12. Procaine infiltration around the renal arteries has been recommended to forestall the development of anuria. In this case, ultrafiltration could probably have been used more. Previous experience with pushing ultrafiltration to the limit was lacking. It may be mentioned here that the usual empiric management of fluid balance during dialyses resulted occasionally in marked disparities from clinical estimates when actually measured.[14]

#10 30, m.

Two-year history of rapidly progressive glomerulonephritis. Had nephrotic features early in course. Digitalized previously for congestive failure. Now azotemic, acidotic, and hypertensive. Two runs, eight days apart, first for three hours. Good relief of pulmonary edema with first run. Basal rales cleared. No clinical improvement after second, though chemical improvement. Died six days later.

#11 58, f.

Diagnostic problem, most likely hepato-renal syndrome. Known hypertensive, OK till 2½ weeks before admission. Minor surgery was followed by anorexia, dark urine, congestive heart failure. On examination, jaundice, ascites, enlarged liver with abnormal liver function tests. Dialyzed; lost 4½ lbs. but no clinical improvement. Ammonia nitrogen levels: before, 0.31 mg%; after, 0.46. Progressive downhill course and died five days after run.

#12 78, f.

Hypertensive cardiovascular disease with congestive heart failure and coronary insufficiency. Diabetes mellitus. Nocturnal dyspnea and pedal edema. Became oliguric; ascribed to possible diabetic glomerulosclerosis. Lost only ¾ lbs. with dialysis. Improvement lasted one week, then gradually deteriorated with death at 4½ weeks.

#14 49, f.

Rheumatic fever at age 12. Mitral valvulotomy three years before. Gastrectomy and cholecystectomy one year later. Acute flu syndrome five days before admission causing congestive heart failure. Apparently responded to therapy: Thiomerin 2 ml, Naturetin (benzydroflumethiazide) 5 mg, KCl 3 g., all daily. From second hospital day, Furadantin for pyuria. On ninth hospital day, temperature spiked to 103.8° with possible drug rash. On tenth hospital day, shock with BP 80/0; pulse 36, regular; ECG, no P waves, peaked T waves; K^+ 7.5 mEq/l, Na^+ 110, Cl^- 93, CO_2 10.8. Intravenous 5% NaCl and other solutions yielded only 5 ml urine. Dialyzed on eleventh hospital day to correct electrolyte imbalance and treat edema. Had gained 13½ lbs. in two days with peripheral and facial edema; lost six lbs. during dialysis. Oliguria due to shock lasted 11 days.

#15 70, m.

In St. Francis Hospital five days with three-week history of right lower chest pain and cough (pneumonia?), weight loss, and weakness. No high fever. Became more dyspneic. Digitalized on third hospital day. On fourth day, sticky black stool with BP 110/70 falling to 90/50. On fifth day, BUN 160 mg%, K^+ 7.6 mEq/l, but no clinical evidence of hyperkalemia. Originally, good urinary output, adequate S.G. (1.023-26), proteinuria 1-2+. Possibly dehydrated. Transferred to The Queen's Hospital for dialysis, critically ill and comatose, BUN 248 mg%. Fell to 70 with little rebound after dialysis; urinary output good and progressively increasing. Up eating after two days. Transferred to Leahi Hospital on tenth day after dialysis because of atypical AFB on sputum culture. Died 11 days later unexpectedly, though had chest pain for two days.

#16 51, m.

Proteinuria for 30 years. Gout for three years. Malaise and weakness for two weeks. Emesis three days. Died two weeks after dialysis with uremia and congestive heart failure.

#17 44, f.

Delivered; no complications. Five weeks later, fever. Admitted three weeks later to Kuakini Hospital with chills, backache. Treated with Aureomycin and Kanamycin. Six days after admission, BUN 124 mg%, creatinine 7 mg%, K^+ 5.b mEq/l, CO_2 27 mM/l. Gradually became lethargic and comatose. Urinary output good; seven days after admission, 1500 ml. All urines, S.G. 1.006-10. Transferred to The Queen's Hospital after eight days, for dialysis. Awake the day after dialysis. Urine volumes adequate after dialysis, 700 ml, 900 ml, then 1700-2700 ml with S.G. 1.010-12, yet BUN rose steadily to maximum of 85 mg% eight days after dialysis. Six days after dialysis, tinnitus. Spiking fever subsided ten days after dialysis.

[14] Andres, B. F., Murphy, J. P., and Zipf, R. E.: Changes in blood volume during use of artificial kidney, J.A.M.A. 170:2167 (Aug. 29) 1959.

TABLE 3.—*Barbiturate poisoning cases.*

CASE NO.	TYPE	AMOUNT INGESTED IN GRAMS	HOURS AFTER INGESTION SEEN	HOURS AFTER INGESTION DIALYZED	HOURS OF DIALYSIS	BLOOD LEVELS IN MG/100 ML			
						before	after	1 day later	3 days later
3	aprobarbital	2	10	24	6				
4	amobarbital	6.67	8	24	7	6.8			
8	secobarbital pentobarbital	2–4 2	1	6	6	4	4.9	3.5	0.7
13	amobarbital	2	5	8	7				
19	amobarbital secobarbital	1.5 1.5	8 (?)	11	6				
20	amobarbital secobarbital	2.5 2.5	6	9½	6	4.1	2.1		
23	secobarbital	4.5	16	22¾	17¼ 8 5½	3 1.3 0.8	1.4 0.6 0.1	dialyzed on successive days	
24	secobarbital	?	9 (?)	12¼	6	3.36	2.65		
25	pentobarbital	3.9	10	17	12	3.1	1.53	0.46	

Comment: A series of non-oliguric acute uremia patients have been reported from the Burns Research Unit, Birmingham Accident Hospital, England.[15] No histologic difference was seen between oliguric and non-oliguric patients.

Attention is called to Finland's review article on the use of antibiotics in renal insufficiency.[16] In fact, unintentional streptomycin overdosage in patients with decreased renal function can be considered an indication for hemodialysis.[17]

#21 26, f.

Renal disease of undiagnosed type. During pregnancy 1½ years before, migratory joint pains with some swelling. Two months before dialysis, puffiness of face, ankle edema, hematuria, proteinuria 3+, no BP elevation. Three weeks before dialysis, marked edema. Questionably positive LE test. Steroids tried. Finally dialyzed. Trouble with bleeding afterwards, from cut-downs, tongue, and bladder. Improvement for only a few days. Remained seriously ill but survived another two months. At autopsy, subacute glomerulonephritis with superimposed pyelonephritis and cystitis.

#22 19, m.

Pfc/Army, pinned under overturned bulldozer. Helicopter evacuation from Waipio to Tripler Army Hospital. Crush injuries of left arm and leg, left hemopneumothorax, avulsion of perineum. Colostomy subsequently performed. Somewhat overhydrated initially in attempt to combat hemorrhagic shock. As expected, progressively developed isosthenuria and oliguria. Transferred to The Queen's Hospital for dialysis. Because of the high catabolic rate in the injured tissues, repeated prophylactic dialyses after the method of Teschan[5] were done, starting four days after the accident, trying to prevent full-blown uremic syndrome. Kidneys began to "open up" two weeks after the accident. Had been on corticosteroids since the accident and shock. Developed sepsis and finally succumbed five weeks after the first dialysis. On postmortem examination, renal tubules showed good regeneration.

Case Summaries of Barbiturate Poisonings

#3 29, f.

Two grams of Alurate (aprobarbital, Roche) ingested; had also been drinking. When seen approximately ten hours after drug ingestion, comatose with deep reflexes absent but vital signs stable. By 20 hours, slight fever, tachycardia if turned. Dialyzed at 24 hours. Some response to cut-down; restless at two hours; responded to name by five hours; thereafter, so restless had to be held down.

#4 43, m.

Ingested 6⅔ g of Amytal (amobarbital, Lilly). Seen approximately eight hours after ingestion. Comatose, areflexic, in shock. Qualitative tests on blood and urine negative for barbiturates. Dialyzed at 24 hours. At four or five hours, groaned, moved head; pupillary reflexes more active, knee jerks sometimes and ankle jerks always elicited. Seventh hour, lifted arms and legs. Fourth hour postdialysis, respirations ceased for 30 minutes; placed on Bennett IPPB machine cycling. Shock difficult to manage; unintentional overhydration using Levophed, 4 ampules/1. Expired third day after dialysis, never coming out of coma.

#8 35, f.

Ingested 2 to 4 g of Seconal (secobarbital) and two grams of Nembutal (pentobarbital). Lavaged for two hours starting less than one hour after ingestion. Less than three hours after ingestion, no response to pain. Dialyzed at six hours. Cut-down without anesthesia. No response during dialysis. One day after run, few swallowing movements. Two days after, responded to pain but still unconscious. Three days after, recognized people; responded to questions. Four days after, better. Five days after, ambulated.

Comment: With our later experience, we would have kept the two above cases on dialysis as long as possible, or would have repeated it within a very short time. Tracheotomy should have been performed early.

[15] Sevitt, S.: Distal tubular necrosis with little or no oliguria, J. Clin. Path. 9:12 (Feb.) 1956.

[16] Kunin, C. M., and Finland M.: Restrictions imposed on antibiotic therapy by renal failure, A.M.A. Arch. Int. Med. 104:1030 (Dec.) 1959.

[17] Edwards, K. D. G., and Whyte, H. M.: Streptomycin poisoning in renal failure: an indication for treatment with an artificial kidney, Brit. M. J. 1:752 (Mar. 21) 1959.

#13 45, m.

Took 2 g of amobarbital. Admitted to Kuakini Hospital five hours after ingestion. Respirations via Bennett machine and endotracheal tube. Dialyzed eight hours after ingestion. At five hours, responding to verbal stimulation. At 5½ hours, opened eyes and responded to questions. At 6½ hours, spoke. At end (seven hours), tried to sit up.

#19 42, f.

Took 1.5 g of amobarbital and 1.5 g of secobarbital (as Tuinal, Lilly). Seen about eight hours after ingestion. Was earlier seen drinking (blood alcohol, 1.5 mg/ml). Comatose, BP maintained with neo-synephrine, respirations cycled with Bennett machine, areflexic. Dialyzed three hours after admission. At 1½ hours, deep tendon reflexes returned. At 1¾ hours, cycled Bennett machine on own. At 2¼ hours, swallowing reflex present. At four hours, corneal reflexes returned. After dialysis, required pressors for 36 hours.

#20 29, f.

Took 2.5 g of amobarbital and 2.5 g of secobarbital (as Tuinal). Lavaged at six hours. Ten ml Megimide I.V. at seven hours. Cut-downs at eight hours; slight reaction to pain. Dialyzed at 9½ hours. Pupils varied in size and response throughout. Ankle jerks elicited momentarily at three hours. Slight reaction to pain at six hours. Six hours later, ate lunch.

#23 47, f.

Took 4.5 g of secobarbital. Found 16 hours after ingestion. Lavaged at 18 hours. Dialyzed at 23 hours. Considerable difficulty performing cut-downs because of inaccessible large arm veins; both femoral veins used. Initial run of 16 hours was longest ever done. Dialyzed three times on successive days. Developed renal shutdown because of shock; treated medically though catheters retained. Dialysis prevented on seventh day of shutdown by partial obstruction of return flow catheter. Recovery from renal shutdown further complicated by Aerobacter aerogenes bacteremia with septic course, and Pseudomonas infection of bladder and cut-downs.

#24 72, f.

Took an unknown quantity of secobarbital. Alcoholic. Admitted and lavaged nine hours (?) after ingestion. Areflexic, comatose, no response to pain. Required tracheal intubation to maintain airway. Megimide, 50 mg IV for five doses; responded a little to pain. However, cut-downs done without anesthesia. Dialyzed at 12¼ hours. Gagging slightly at start so intratracheal tube removed. Restless and stirring at 3¼ hours. Opened eyes a bit when called at 4½ hours.

#25 27, m.

Took 3.9 g of pentobarbital. Lavaged about ten hours after ingestion. Dialyzed at 17 hours. Run of 12 hours was second longest done by us. Semicomatose at end of run with responsiveness increased by Megimide. Next day, awake but sleepy. In another day, talking.

Summary

The first 2½ years' experience with the artificial kidney at The Queen's Hospital has been reviewed. The "kidney" has proved to be simple, safe, and effective. Administrative and technical problems are enumerated. The entire series of cases is presented.

Results with "chronic uremics" proved disappointing in general. Significant prolongation of survival was an exceptional occurrence.

Cases of acute renal shutdown suitable for dialysis were quite rare. This is the group for which the "kidney" was primarily conceived, and any successful application would justify the entire project.

The artificial kidney's effectiveness in hastening recovery in barbiturate poisoning has been amply demonstrated.

Other suitable conditions calling for dialysis exist[18] which we have not encountered, but which we are ready to tackle with confidence. We need to develop a cannulation technique which would permit prolonged repeat dialyses.[6]

Acknowledgement

I am grateful to Dr. W. Harold Civin and Dr. Paul Y. Tamura of the Department of Laboratories for their constant encouragement and enthusiastic support. Miss Margaret Tom provided loyal technical assistance.

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The "sashimi scare" may have been traced to a nematode found in garden slugs and African snails and never before implicated in human disease

Parasitic Meningo-Encephalitis in Hawaii*

A New Parasitic Disease of Man

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A CLINICAL case of parasitic meningo-encephalitis has been fortuitously observed. This entity may be identical with "eosinophilic meningitis" in Tahiti reported by Rosen *et al.*[1] The disease is produced by invasion of the central nervous system by migrating larvae of the rat lungworm, Angiostrongylus cantonensis. This migration parallels the development of the parasite in the usual rat host as determined by Mackerras and Sandars.[2] The term "parasitic meningo-encephalitis" was coined by one of us (J.E.A.).

Case Report

This 62-year-old Japanese yardman was seen on May 29, 1961, complaining of tiredness, generalized achy feeling, and hyperesthesia of the ears, back of head and neck, shoulders, and arms.

There were no remarkable physical findings. He had an old right eyeball injury. Survey chest film was negative. Routine blood count showed a 12,600 white count with 14% eosinophils. When symptoms persisted, the blood count was repeated three weeks later and showed 7,500 white cells with 16% eosinophils.

He denied eating poorly cooked pork but sheepishly mentioned eating two raw garden slugs. This action was based on a Japanese language newspaper account of a medical lecturer from Japan who stated that the eating of snails and slugs "is effective against tuberculosis if swallowed alive. As for the slugs, the slimy ones are good and are helpful in improving the voice of ballad chanters."[3] The general theme of the lecture extolled "raw diet for cleansing of blood." The patient was convinced that slugs would be an unexcelled source of nutritious vitamins and minerals. He was not ill at all but he felt that perhaps his voice was somewhat weak by afternoon of a day of hard physical work.

The slugs were obtained at a lower Manoa valley residence where he was working as a yardman. On May 20, 1961, he ate the first slug. He described how he washed it well, split it open with his fingers and removed the viscera, washed it some more, then chewed it well before swallowing it. Two days later, he experienced chills, aches, and fatigue. He still felt sick but ate another slug in similar fashion on May 24. Again, in two days, he experienced exacerbation of the same symptoms and in addition, noted the hyperesthesia.

On June 29, ten Veronicella slugs were collected from the same yard where the patient had obtained the ones he had eaten. Artificial digestion of these slugs en masse yielded several hundred infective rat lungworm (A. cantonensis) larvae. These larvae produced brain infection when fed to laboratory-raised white rats.

Even though the patient showed no clinical signs of meningeal irritation, a lumbar puncture was done on June 30. The cerebrospinal fluid was clear and the pressure normal. White cells numbered 284/mm³ with 17% neutrophils, 25% eosinophils, and 58% lymphocytes. Protein was 50 mg%. Quantitative RPCF was "anti-complementary."

Stool examination was negative for ova and parasites.

On June 30 the patient was skin tested using as antigen a physiologic saline extract of powdered adult A. cantonensis diluted 1:10,000. A test with Trichinella antigen, Lederle (1:10,000), was also made. Negative reactions were obtained with the rat lungworm control, Trichinella antigen and Trichinella control. A positive reaction was noted to the rat lungworm antigen. The reaction showed the following: at five minutes, two pseudopods; at 15 minutes, maximal reaction with swelling measuring 1.5 cm in diameter and redness 3.5 cm; at one hour, swelling of 1.8 cm was present but redness had disappeared. One of us (S.R.H.) served as control and showed negative reactions to both the rat lungworm antigen and the rat lungworm control.

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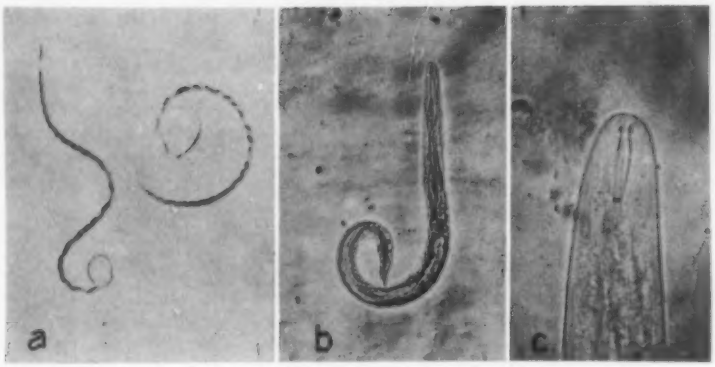

FIG. 1.—*Angiostrongylus cantonensis. (a) Adult females from the lungs of a rat (3×); (b) Infective larva from a land planarian (200×), average size being about 0.42 to 0.49 mm long by 0.025 mm in maximum width; (c) Anterior end of the infective larva with characteristic chitinous rods (stomatorrhabdions) (400×).*

The patient had been treated symptomatically with analgesics. After lumbar puncture and skin tests were done, steroids were started. There was a moderate degree of immediate improvement but mild symptoms did persist.

Discussion

The rat lungworm, A. cantonensis, was first observed in Hawaii late in 1960 by L. R. Ash of the University of Hawaii Parasitology Department, during a survey of parasites of rodents.[4] About 12 per cent of the rats he examined were infected. Suitable carriers of the infective larvae of A. cantonensis in Hawaii include various species of mollusks such as the common garden snail (Eulota similaris), the African snail (Achatina fulica) and the slug (Veronicella leydigi), as well as the land planarian (Geoplana septemlineata).[5]

The possible medical importance of this parasite was recognized by one of us (J. E. A.), who had suggested that it might be involved in the outbreaks of eosinophilic meningitis in Tahiti.[5] A field trip was made to Tahiti in June, 1961, which revealed a high incidence (88.5%) of A. cantonensis among rodents and its presence in various land mollusks and planarians. Experimental infections by the percutaneous and oral routes were successfully achieved in the guinea pig and laboratory rat. A squirrel-monkey was successfully infected by stomach tube by feeding of infective larvae obtained by artificial digestion of mollusks. Developmental larvae were found in the monkey's brain five days after feeding.[5]

A Honolulu pathologist, R. B. Chappell, discovered eosinophilic meningo-encephalitis in autopsies of patients at the State Hospital in December, 1959, and January, 1960. Reexamination of the brain from the second case by Rosen's group at the N.I.H. in April, 1961, disclosed nematodes identified as A. cantonensis.[6]

One of us (J.E.A.) has suggested that human oral and percutaneous routes of infection are possible, viz., accidental ingestion of whole or part of a mollusk or land planarian with improperly cleansed or washed vegetation which is eaten raw, ingestion of larvae with contaminated water, skin infection by handling vegetation containing infected land planarians, or walking barefoot over moist areas in which larvae from crushed or dead planarians or slugs are present.[5] The modes of transmission of the naturally-occurring disease in Tahiti remain to be demonstrated and should be reconciled with the epidemiologic observations of Rosen *et al.* regarding incubation period, age incidence, racial variation, and geographic distribution.[1]

Summary

Report is made of a case of parasitic meningoencephalitis caused by the migration through the brain of developmental larvae of the rat-lungworm, Angiostrongylus cantonensis. This represents the first clinically diagnosed case of a newly recognized illness of man in Hawaii.

Infection of the patient resulted from ingestion of raw slugs (Veronicella leydigi) from an area in Honolulu where other slugs were found in the natural state to harbor infective larvae of A. cantonensis.

The diagnosis was based on neurologic and nonspecific symptoms, presence of eosinophilia in the spinal fluid, and positive skin reaction to A. cantonensis antigen.

It is suggested that this disease may be identical with "eosinophilic meningitis" in Tahiti, reported by Rosen *et al.*

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A rare pediatric abdominal emergency,
successfully managed by surgery and antibiotics

Perforated Duodenal Ulcer in a Premature Infant with Survival

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PEPTIC ULCERATION in children is a well recognized entity,[10] but the rupture of these ulcers in newborns is quite unusual.[11,17,19,27,36] Indeed, the perforation of a duodenal ulcer in a premature infant with survival is very rare.[36] Because of the rarity and seriousness of this lesion, this report is made.

Case Report

A Negro girl weighed 4 pounds, 9½ ounces when born on September 27, 1960, of a toxemic 18-year-old mother whose expected date of confinement was October 11. The mother's blood type was O, Rh positive. Prenatal course was unremarkable until September 26, 1960, when symptoms of severe pre-eclampsia appeared.

At 36 hours of age, the child was given glucose solution orally. Feedings were retained. On the third day of life, when the infant weighed 4 pounds, 3 ounces, she started to regurgitate her formula and some mucus. There were ten such episodes.

Physical examination revealed a critically ill, moderately dehydrated, and puny infant. Respirations were 44 per minute. The pulse was 164 per minute. The abdomen was markedly distended and tympanitic. Peristalsis was absent.

The hemoglobin was 20.5 grams, the hematocrit was 78%, and the white count was 1,250. Roentgenograms of the chest and abdomen showed a large pneumoperitoneum with diaphragm bilaterally elevated.

On September 30, 1960, under endotracheal anesthesia, an exploratory laparotomy was performed through a right paramedian incision. Generalized peritonitis was found, along with a considerable quantity of serous fluid and milk curds in the abdominal cavity. A four mm perforation in the anterior wall of the first portion of the duodenum was located and repaired with five interrupted sutures of #4-0 black silk. The other viscera appeared normal. A Penrose drain was placed in the right upper abdominal area.

Postoperatively, the child was treated with 4,500 units of procaine penicillin and 40 mg of streptomycin every 12 hours. Balanced electrolyte solution (Ionosol) was given intravenously and a gastric tube was connected to suction.

Leucocyte counts were 17,800 on the sixth postoperative day, 48,600 on the seventh postoperative day, and 31,000 on the ninth postoperative day. However, the white count dropped to 12,440 on the fourteenth postoperative day. Repeated daily examinations and subsequent chest and abdominal roentgenograms were normal.

DR. CHANG

The Penrose drain was removed on the fifth postoperative day. The infant was started at that time on oral feedings. Antibiotics were stopped on the fourteenth postoperative day. On October 30, 1960, the child weighed 5 lbs 2 oz. She was discharged that day to be followed in the outpatient clinic, and has done well subsequently.

Discussion

The first recorded case of perforation of an ulcer in infancy was reported by Siebold[32] in a two-year-old infant. The lesion was found in the stomach. Since then there have been several other cases reported in children.[2,4,8,9,18,21,25,31]

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FIG. 1.—*X-ray showing extensive pneumoperitoneum. Note air-fluid level in abdominal cavity.*

FIG. 2.—*Upright film showing extensive pneumoperitoneum. Air-fluid level is also evident.*

In 1941, Bird[4] collected five cases of rupture of peptic ulcers in newborns (0-14 days), with four deaths. Newman[24] has stated that perforation in children is extremely uncommon. Thelander and Mathes[35] mention that perforation of the gastrointestinal tract before or shortly after birth is rare and associated with a uniformly bad prognosis.

Two of the youngest and smallest children with duodenal ulcer perforation who survived following surgery were those reported by Whittico[36] and Lyday, *et al*[17]. Whittico's[36] patient was a 3 lb 2 oz premature boy, born of an eclamptic mother. Two days after birth, distension of the abdomen was noted. At operation, perforation of the anterior surface of the first portion of the duodenum was found. Lyday, Markarian, and Rhoads[17] sutured a four mm perforation in the anterior wall of the first portion of the duodenum in a 4 lb 10 oz girl. The perforation occurred on the third day of life. There has been a report of perforation of a gastric ulcer in utero.[15]

Incidence

The incidence of perforation of peptic ulcer in infancy is difficult to ascertain, though hemorrhage associated with ulcer appears to be a not infrequent occurrence.[21, 24] Diagnosis of peptic ulceration itself is made only infrequently in children. Alexander[1] pointed out that peptic ulcers often masquerade as chronic appendicitis, allergic indigestion, and neurosis. Therefore, they are frequently overlooked. Benner,[3] in 1943, in 500 routine autopsies, reported an incidence of duodenal ulcer of 1.4%.

Duodenal ulcers have been said to be less common than gastric ulcers in children.[21] However, Bird[4] has shown that the ratio of gastric ulcers to duodenal ulcers is 2 : 1 in early infancy, but after two weeks of age the ratio changes.

The ratio of males to females is about 3 : 2.[21]

Etiology

The probable etiology of peptic ulceration in children has been well covered in excellent reviews[10, 12, 14, 22] and no attempt will be made in this paper to mention any aspect of this phase of the disease.

Pathology

Ulcerations in infants are of the acute type[3, 4, 21] and produce spectacular clinical manifestations, e.g., bleeding or perforation, or both. Therefore, it is possible that a higher percentage of these cases have been reported in the literature than of the chronic type which occurs in older children.[21] Guthrie[10] and Benner[3] emphasized the lack of repair attempts, the absence of inflammatory reaction, and the association rather with necrosis and hemorrhage. Gillespie[9] has mentioned that gastric ulcers occur more commonly on or near the lesser curvature and perforate more frequently than duodenal ulcers. The ulcerations of the duodenum usually occurred in the first portion.[1, 4, 21]

Symptoms and Signs

The symptoms and signs of ulcer perforation in neonates are mainly vomiting, poor feeding, abdominal distention, and irritability.[6, 7, 27, 33] Thelander[34] emphasized the rapid distention of the abdomen as the most consistent finding. Quinn[26] stated that the two diagnostic criteria were pneumoperitoneum and abdominal distention.

Roentgenograms and Treatment

Roentgen examination of the abdomen usually shows much free air within the peritoneal cavity.[21] A large pneumoperitoneum usually points to the stomach or duodenum as the site of disease. Muggia[23] claimed that a perforated duodenal ulcer is the most common cause of pneumoperitoneum in newborns. An upright or lateral decubitus film should demonstrate air in the abdomen.

It has been stated that the great majority of neonates with ulcers either bleed copiously or perforate, or both.[4] Because of the fulminating disease process, very few cases reach the operating room. High mortality is associated with neonatal perforation. Bird[4] has reported a survivor who was a 7 lb 1 oz full-term infant with a ruptured duodenal ulcer which was sutured 34 hours after birth. Whittico[36] and Lyday,[17] respectively, have written of a 3 lb 2 oz premature infant and a 4 lb. 10 oz. girl, who recovered. A case of a three-month-old boy was reported in 1930 by Selinger.[30] Schwartz and Halberstam[28] in 1943 presented the case of an 11-month-old white boy with a perforated duodenal ulcer, with recovery. Rapid diagnosis and early surgery[16] provide the best chance for survival. Since the omentum is so scanty in these infants, walling off of the lesion seldom occurs.

Summary

A case of perforation of duodenal ulcer with resultant generalized peritonitis in a premature infant, successfully treated by emergency surgery, is reported. A review of the American literature is also presented.

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Is your patient's jaundice "medical" or "surgical"?
Radioiodinated rose bengal can usually tell you, in 30 minutes

Liver and Biliary Tract Function Testing
With Radioiodinated Rose Bengal

ROBERT A. NORDYKE, M.D., Honolulu

INTRAVENOUSLY injected radioiodinated rose bengal dye, in conjunction with simple external body counting, provides the following information:

1. Estimation of liver function regardless of the depth of jaundice.
2. Determination of whether biliary tract obstruction is present.
3. Exact localization of the biliary tract obstruction in certain instances.

The body handles rose bengal very much as it does BSP. The radioactive dye has the advantage, however, of being injected in trace amounts and so being usable even when complete biliary tract obstruction is present. It causes no reactions, and since a radioactivity level rather than color provides the end point it can be used regardless of the amount of liver damage or depth of jaundice.

Rose bengal is removed from the blood by the liver cells and is then passed through the cholangioles into the extrahepatic biliary tract. During fasting it collects in the gall bladder (or common duct in the absence of the gall bladder) and is promptly evacuated into the intestine after fat food or cholecystokinin administration. Liver function may be quantitated by obtaining a blood disappearance rate, and biliary tract obstruction may be determined by observing whether dye flows from the biliary tract into the intestine.

Liver Function

Liver function is estimated from the rate of disappearance of rose bengal dye from the blood.[1] A scintillation probe, properly shielded and collimated, is placed against the side of the head of the fasting supine patient (Figure 1). After intravenous injection of tracer rose bengal, count rates are taken over a 20-minute period. The count rate at 20 minutes, compared to 5 minutes, is 50 per cent or less in normal subjects (Figure 2). Profound liver injury causes retention of between 90 and 100 per cent of the dye in the blood; such levels almost always indicate primary liver disease. In borderline liver dysfunction without jaundice, the test compares favorably with the BSI test.

Received for publication July 25, 1960.

[1] Nordyke, R. A., and Blahd, W. H.: The blood disappearance of radioactive rose bengal: rapid simple test of liver function, J.A.M.A. 170:1139 (July 4) 1959.

Biliary Obstruction

Biliary tract obstruction is detected by a second probe placed over the abdomen below the liver (Figure 1).[2] After baseline count rates are obtained, milk or cholecystokinin is administered. If dye then flows into the intestine (indicated by increasing radioactivity beneath this probe) no effective biliary tract obstruction is present (Figure 3). This occurs in most intrahepatic ("medical") diseases with jaundice. It can occur in the presence of nonobstructing common bile duct stones with subsiding jaundice, but will not occur with carcinomatous or other effective obstruction of the common duct.

DR. NORDYKE

Conversely, if dye fails to enter the intestine, biliary tract obstruction is present. This will occur whether the obstruction is intra- or extrahepatic. It occurs in all instances of jaundice due to effective extrahepatic biliary tract obstruction, and in a few instances of the early phase of viral hepatitis, cholangiolitic hepatitis and biliary cirrhosis. Failure of dye to flow into the intestine thus diagnoses biliary tract obstruction but does not localize it.

Localization of Obstruction

It is sometimes possible to localize a complete biliary tract obstruction to the extrahepatic ("surgical") portion of the tract. One method is to "scan" the gall bladder area. A concentration of activity here indicates that no intrahepatic obstruction is present; subsequent failure of the dye to flow into the intestine after cholecystokinin administration localizes the obstruction to the distal common bile duct.

[2] Garcia, A. M., Ahmad, K., Wegst, A. V., and Beierwaltes, W. H.: I^{131}-rose bengal test of liver function: a clinical evaluation, Gastroenterology 37:725 (Dec.) 1959.
Nordyke, R. A.: Biliary tract obstruction and its localization with radioiodinated rose bengal, Am. J. Gastroenterol. 33:563 (May) 1960.

FIG. 1.—*Placement of scintillation probes.* Left *probe is at lateral head to detect rate of disappearance of rose bengal from blood.* Right *probe is over abdomen below liver to detect rose bengal as it flows into the intestine from the biliary tract.*

A second method makes use of the combination of results from liver function and biliary tract testing. When complete obstruction has been demonstrated and the liver function is good (less than 70% retention) the obstruction is surgical.

Jaundice

The approach to the jaundiced patient is as follows. First, the blood retention of the dye at 20 minutes is determined in the fasting state. If this is over 90%, the lesion is non-surgical.

Cholecystokinin is then administered. Flow of dye into the intestine occurs only when there is no effective biliary tract obstruction. Confidence that the disease is non-surgical is 95%.

When dye fails to flow into the intestine, a biliary tract obstruction is present. Most—but not all—of such patients will have surgical conditions. If there is good liver function (below 70% retention) the lesion is surgical.

When the diagnosis is not clear after the above procedure, a second test is done four to eight days later. Thus, the course of the disease may be determined and the problem solved.

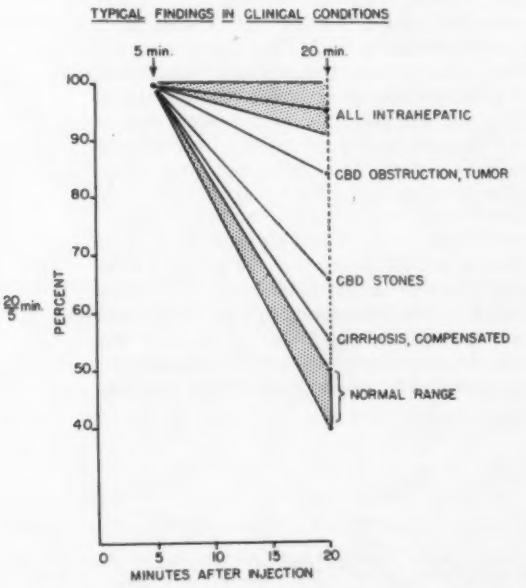


FIG. 2.—*Liver function as determined by the rate of disappearance of rose bengal from the blood (see text).*

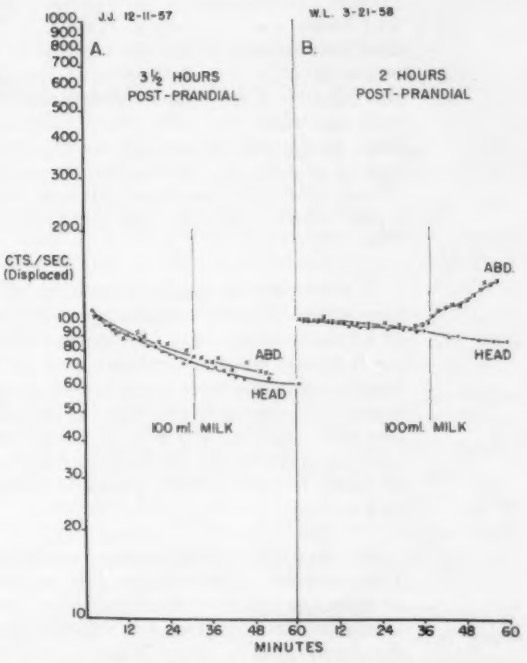


FIG. 3.—*Biliary tract obstruction. A. Complete obstruction by pancreatic carcinoma. No increase in abdominal count rate occurred after milk ingestion. B. Decompensated Laennec's cirrhosis without biliary tract obstruction. The abdominal activity increased after milk ingestion.*

When these procedures were applied to a series of 140 jaundiced patients, a positive diagnosis (intra- vs. extrahepatic) was made in 95. For intrahepatic disease, this was better than any combination of the standard liver function tests done simultaneously; for extrahepatic disease, the tests provided the only positive laboratory criterion for surgical intervention.

It is important to recognize that, although rose bengal testing may be most helpful and often provides the key information needed for proper patient handling, the final interpretation, as with all laboratory procedures, remains in the hands of the clinician.

1000 Ward Avenue.

The President's Page

DR. BURDEN

On my return from a six-week trip on the Mainland I was glad to learn that an excellent contract agreement had been reached between the various county societies and HMSA, giving us the framework for some real advances in providing prepaid medical care of the highest quality for all through HMSA's various plans. Let's get behind this and really make it work. HMSA is better than commercial plans—let's prove it! Only one suggestion for improvement. Let's make the Medical Care Plans Committee, which will negotiate any new plans instituted, a State committee so that all county societies can have their say during the negotiations. This is especially pertinent with the State and County employees plan coming up, a plan which will affect the outer islands proportionately more so than the Federal Plan did.

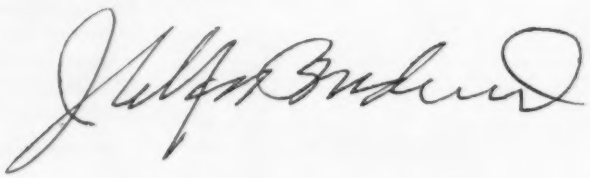
* * *

While away: Attended a meeting of WICHE and surprised and alarmed to learn that while 25 years ago the majority of medical students came from the A group of students, today only 18% come from the A group and the vast bulk come from the B group. Another indication of the lessened prestige of the medical profession. Several state societies have active programs aimed at interesting more top level students in the study of medicine and allied sciences. The need for establishment of two-year medical schools, in states not having need or capacity for four-year schools, as feeders to the four-year schools, was dramatically presented. This would, in many instances, help persuade more of the top students to think of medicine as a career.

* * *

Am wondering how many doctors have joined a precinct club in their area? The need for all doctors to join a precinct club of their choice, and through it to fight not just socialized medicine but all socializing trends of the Government, is urgent. Shortly after Khrushchev came into power he said, "We cannot expect the Americans to jump from Capitalism to Communism, but we can assist their elected leaders in giving Americans small doses of Socialism, until they suddenly awake to find they have Communism." We see increasing evidence that this is happening and unless we exert our right as free men to join the party of our choice and through it to actively fight the inroads of Government into our God-given freedoms and rights, we will awake someday soon to find that we are in the grip of a completely planned economy, the welfare state under which the Government controls and runs everything, where the Government is supreme and the individual is not free—the kind of system found in Russia today. Every day we see and hear of people and groups calling on the Government to do more and more of those things which we as Americans can and should do for ourselves. Isn't it about time that we take a serious look at this situation and do something about it? And by we, I mean you and I—not someone else. We can do something about it by joining the Hawaii Physicians League for Good Government and by joining your local precinct club and being active in both.

Mahalo!



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[EDITORIALS]

No Hurry About Oral Polio Vaccine

There are two kinds of polio vaccine: killed (Salk) and live attenuated (Sabin). Salk vaccine was supposed to prevent paralytic polio without preventing subclinical polio—but it seems to have done both. Sabin vaccine is supposed to prevent polio, and it seems clear from mass trials in Europe that it does this.

But should we in the U. S. A.—as the A.M.A. recommended last June—start administering Sabin vaccine as soon as we can get it? "No!" says David Bodian of Johns Hopkins.[1] We should not.

In the first place, there is growing evidence to suggest that Salk vaccine may have been largely instrumental in virtually eliminating type II poliovirus from the epidemiologic scene, and in sharply depressing the incidence of cases due to type I virus. Total cases of paralytic polio in the U. S. have dropped from 4,055 in 1959 to 1,573 in 1960 and to 589 so far in 1961—with the summer peak, almost nonexistent this year, well behind us. Hawaii has had 4 cases so far this year.

Would live virus (Sabin) vaccine have done better than this—or could it do better? Perhaps; but there is no evidence that this is so.

If live virus vaccine were given now, on a casual, take-it-or-leave-it basis, would it improve matters appreciably? Not much, surely; it would be almost certain to miss the irresponsible or prejudiced ones who didn't avail themselves of Salk vaccine.

If live virus vaccine were given now on a mass inoculation basis, could we reach the 75 per cent of the total population that would be required in order to accidentally colonize most or all of the reluctant ones? Probably not. The same people who wouldn't take Salk vaccine would probably refuse to take Sabin vaccine, and to these would be added many who, having taken Salk vaccine, would feel they had done all they need to.

Since type I virus is the most important one, would it help matters to go ahead and administer this vaccine to those who would take it? Well, it would do no great harm, as long as we were not planning to follow it soon with types II (licensed for commercial production on October 10) and III (not yet licensed). Only a community *fully* protected by type I vaccine can safely be inoculated with types II or III, since accidental "overflow" inoculation with these latter types would interfere with development of immunity to type I.

Any extensive administration of type I Sabin vaccine, however, would interfere seriously with further evaluation of the effectiveness of the Salk vaccine program—which has itself already been so extensive as to virtually preclude evaluation of any new, superimposed program of oral polio vaccination. A further decrease in the incidence of polio after general administration of type I oral attenuated vaccine would prove nothing—it might be merely a continuation of the effect of Salk vaccine. A spontaneous rise in the incidence of polio under such circumstances would, Bodian points out, be indistinguishable from the result of reversion of the virus to a virulent form, however unlikely this might seem. We might lose; we couldn't be sure we had won.

If the oral vaccine has any present usefulness in our highly Salk-immunized community—and it can't have much—it must be limited to its value in (1) controlling type specific epidemics, if any; (2) immunizing infants; and (3) immunizing any population groups in which few individuals have had Salk vaccine. To attempt more than this, in the light of present knowledge, could do little or no good, and might do irreparable harm.

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Medication By Government Fiat

The pharmaceutical industry is justifiably concerned—and physicians and the public should be, too—about proposed Federal legislation in the drug field. A few outstanding imbecilities that are still in danger of being enacted into law are the following:

1. To require pharmaceutical advertisements to include a list of side effects and contraindications of each drug advertised—which would require so much space that no firm could afford it.

2. To permit patenting of a new drug or drug combination only if the Secretary of Health, Education and Welfare found it had significantly greater therapeutic effect than its predecessors—whatever exactly this might mean.

3. To limit patent rights over new drugs to three years instead of 17—which would hamstring research programs and virtually stop the development of new drugs.

4. To authorize the Food and Drug Administration to make determinations of the efficacy (as well as the safety, strength, and quality) of new drugs.

5. To empower the Secretary of Health, Education and Welfare to determine the official or generic names of new drugs.

The American pharmaceutical industry—John Lear of *Saturday Review* and Arthur Kallet of *Medical Letter* to the contrary notwithstanding—has served this country and the world very well, and still is. And the present powers of the FDA are quite adequate. And free enterprise is still preferable to medication according to the wisdom of Mr. Ribicoff or any of his probable successors.

1984 is approaching fast enough; let's not hurry it!

No More Scruples*

We went behind the screen in a pharmacy the other day. The apothecary handed us a little weight with a stylized "3" on it. "Recognize this?" We confessed that we didn't, though the symbol looked vaguely familiar.

"Ah," he said, "this is a scruple. Perhaps this is the last scruple in town. No one ever prescribes medication in scruple doses any more. No one ever asks me to compound a prescription by taking a scruple or two of some precious drug."

A memory slowly returned. "Twenty grains equal one scruple. Three scruples equal one drachm. Eight drachms equal one ounce."

The word itself stems from the Latin *scrupulus*, meaning "small stone," reminiscent of an earlier "scrupa" for stone. Indeed "scrotum" comes from the same word—stone. A small painted stone was used to chip other stones, as diamonds are used to cut diamonds. So *scrupulus* became the stony little shredder. In fact the word "shred" ultimately comes from *scrupulus*—as, indeed, do "shroud," "screed," and "scrutiny." The little pointed stone became the prick of conscience (scruple in the modern sense). To the Romans it was a way of expressing the smallest weight they could use—the little piece of stone—*scrupulus*. Precious stones were weighed in units of 24—each being a carat. So other items were weighed in units of 24 (a 24th of an ounce), each unit being then a scruple. The scruple then was standardized as the 24th of an ounce—and when the drachm was developed as an eighth of an ounce, a drachm was equated to three scruples. Not until centuries later, could people handle a smaller unit—the grain.

In other parts of the Roman world, the scruple was a unit of currency (their smallest coin) and a unit of longitude (a sixteenth of a degree) and, in some places, even a unit of time.

With the dawn of the Middle Ages, man began to wrestle with his conscience. Sometimes he would be hesitant in his anxiety to determine what was right and what was wrong. The smallest matter might provoke a doubt. A less compulsive man might laugh and say that this was too trifling a matter to hesitate over. But the more conscientious person would not risk his ticket to eternal life by falling down on even the most trivial matter. Hence, the word "scruple"—symbol of the smallest weight—became the word to describe the trifle that caused the troubled man to hesitate. The word was also used in another sense. The ancients balanced their crude scales on a small sharp-pointed stone which served as a pivot. So this small stone (scrupulus) became a term for the axis on which delicate matters could be balanced.

Here then is the rich and romantic history of an ancient apothecary's weight. They complain today that the pharmacist is a repackager of wholesale drugs. But a generation or two ago he was the heir of the alchemist; he was the artist who compounded the prescription. He did it with care, measuring every scruple, every drachm, every grain. He was precise. In both senses of the word, he had scruples.

Today's medical student knows neither the word nor the symbol. Well, we no longer need that weight. With our sterile, colorless, but efficient metric system, we can forget the drachms, and grains—aye—the scruples too—that once lent color and variety and preciseness to the ancient art of the apothecary. We can scuttle the scruple. And too often we do just that.

* Editorial from *The Journal of the Medical Society of New Jersey*, 57:2 (Jan.) 1960.

This is What's New!

Radiologists in Philadelphia advocate **periodic x-ray examination of breasts** as a **screen for malignancy.** Periodic x-ray examinations were performed at six-month intervals for five years on 1,300 women with the discovery of 23 carcinomas of the breast. In six patients the tumor was not palpable and operation was performed because of x-ray findings alone. (*J.A.M.A.* [July 1] 1961.)

* * *

"All persons are cautioned to avoid handling abnormally behaving bats and, if bitten, are advised to try to catch the bat and immediately notify a physician." This advice was given to the residents of New York after two children were bitten by **rabid bats** in unstate New York. Fortunately, there is no rabies in Hawaii, due to the strict animal quarantine. Bats, perhaps the rarest species in the world, do exist in the upland areas of Hawaii but have rarely been seen even by kamaainas. (*Modern Drugs* [Sept.] 1961.)

* * *

Dragstedt asks Dragstedt: "Why does not the **stomach** digest itself?" and then proceeds to answer this by explaining the duodenal and antral **inhibitory mechanisms** that check the secretion of gastric juice." (*J.A.M.A.* [Sept. 16] 1961.)

* * *

The widely used diuretic antihypertensive, **chlorothiazide, causes pancreatitis** in mice and, if elevated serum amylase is indicative of pancreatitis, also causes it in 50 per cent of humans treated with this drug. (*New Eng. J. Med.* [Oct. 5] 1961.)

* * *

The Hilo **tidal wave** of 1960 killed 61 people in spite of a 20 minute warning siren that was sounded four hours before the wave hit. Even the 300-odd people who successfully evacuated before the wave admitted to a **confused and apathetic response** to the **warning signals.** This response to warning signals should be carefully studied by those who must deal with natural or unnatural disasters. (*Science* 133:1405, 1961.)

Spironolactone, in contrast to hydrochlorothiazide, does not cause hypotension or oligemia in nonedematous, hypertensive patients. However, the combination of **spironolactone** and **hydrochlorothiazide** enhances the hypotensive effect of hydrochlorothiazide but **hypokalemia is prevented.** (*Arch. Int. Med.* [Sept.] 1961.)

* * *

Gallstones and diabetes are a frightful combination. Diabetics requiring emergency surgery for their gallstones have a mortality five times as great as that of nondiabetics. In the 51 to 65 age range, the mortality among diabetic patients requiring gall bladder surgery was 20 times greater than among nondiabetics. The authors advise **cholecystotomy more frequently** for **acute cholecystitis,** and **prophylactic cholecystectomy** in **diabetics with gallstones.** (*Am. J. Surg.* [Aug.] 1961.)

* * *

The **routine use of quinidine** (0.3 grams q.i.d.) immediately after **myocardial infarction** did not reduce the death rate nor did it reduce the incidence of cardiac arrhythmias in a small group of patients so treated. (*Brit. Heart J.* [July] 1961.)

* * *

It takes a lot of **penicillin** to **prevent rheumatic fever** in children. Of 2,500 children seen because of sore throat, half had beta hemolytic streptococci. Of the group harboring the beta strep, half received 600,000 units of Benzathine penicillin while the other half (600) received symptomatic medication. Two of the 600 controls developed rheumatic fever while one developed acute nephritis. No such complications occurred in the 600 patients treated with penicillin. (*J. Med.* [Sept. 21] 1961.)

* * *

Bizarre premature ventricular beats were always associated with heart disease in 4,000 hospitalized patients. The more "normal" premature ventricular beat was found in the electrocardiogram of both healthy and diseased hearts. (*Am. J. Med Sci.* [Sept.] 1961.)

FRED I. GILBERT, JR., M.D.

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In Memoriam - Doctors of Hawaii - XXXV

This is the thirty-fifth installment of the Memoriam—Doctors of Hawaii.

Irwin James Shepherd

Irwin James Shepherd was born in Lebanon, Kent County, Delaware, on February 23, 1874. He was the son of James Henry and Mary Jane (Jester) Shepherd.

After the death of his father and the remarriage of his mother, he lived in Delaware City, Delaware, with an uncle who was a druggist. Young Shepherd became a licensed pharmacist before he entered medical school.

DR. SHEPHERD

He attended the public schools of Delaware, graduated from Delaware College in 1894, and received his M.D. degree from the University of Pennsylvania in 1899. He interned at the U. S. Marine Hospital Station, Stapleton, Staten Island, New York, from 1899 to 1900.

Dr. Shepherd was physician for the LaFollette Coal, Iron and Railway Company in LaFollette, Tennessee, from 1900 to 1905. During the same period, he was also local surgeon for the Southern Railway Co.

On June 3, 1903, he married Logan Locker Warner at LaFollette, Tennessee. The couple had three daughters: Logan Mary (Mrs. Herbert M. Richards, deceased), Carolyn Warner (Mrs. Harold S. Burr), and Elizabeth Morrison (Mrs. James M. Murray).

From 1905 to 1910, Dr. Shepherd practiced in Wilmington, Delaware. He was on the medical and surgical staff of Delaware Hospital, visiting physician of Children's Hospital in Wilmington, Delaware, and also visiting physician from 1907 to 1910 of the Open Air Tuberculosis Hospital. He was medical referee for the Mutual Life Insurance Company of New York, 1907 to 1937.

Dr. Shepherd arrived in Honolulu October 4, 1910. He engaged in private practice, being associated with Dr. William C. Hobdy from 1910 to 1920, when Dr. Hobdy left the Territory. Within two months after his arrival in Hawaii, he was on Maui directing and setting up treatment centers for the epidemics of smallpox and scarlet fever which broke out in December of that year. Dr. Shepherd was General Health and Sanitary Officer for the Territorial Board of Health, Bacteriologist, Pathologist, Medical, and Sanitary Officer for the Territory in 1911. During 1911 and 1912 he was acting Assistant Surgeon, U. S. Public Health and Marine Hospital Service.

He was president of the Medical Society of Hawaii in 1917. He was on the staff at The Queen's Hospital until his death and practiced also at St. Francis Hospital, Kauikeolani Children's Hospital, and at Kapiolani Maternity and Gynecological Hospital.

During World War I Dr. Shepherd was a Captain in the Medical Corps, U.S.A., from October 9, 1918, to July 31, 1919, and was stationed first at Schofield Barracks and later at Fort Shafter. While on duty at Schofield Barracks, General Hurd had Captain Shepherd lay out the original nine-hole golf course for the Post.

He was a member of the Medical Club of Philadelphia, American Medical Association, Medical Society of Hawaii, University Club of Honolulu, the Pacific Club, Oahu Country Club, American Legion, University of Pennsylvania General Alumni Association, and University of Pennsylvania Club in Hawaii. He served as the first president of the University of Pennsylvania Club in Hawaii in 1936, appointed as a member of the University of Pennsylvania Bicentennial Committee of the Hawaiian Islands in 1937. Dr. Shepherd was also licensed to practice in California.

Dr. Shepherd died in Honolulu on October 21, 1937, at the age of 63.

MRS. IRWIN J. SHEPHERD

Martin Hagan

Dr. Martin Hagan was a graduate of Starling Medical College, Columbus, Ohio, in 1859 and also studied at the College of Physicians and Surgeons in New York.

After serving with the Union forces in the Civil War, he practiced in St. Paul, Minnesota, until 1881. In that year he came to the Island of Hawaii where he was associated with Dr. Lyman S. Thompson of Kohala, and later took over Dr. Thompson's practice while he made a trip to the mainland. A newsletter from Kohala written in February, 1882, says, "we note upon the return of our M.D. (Thompson) from the Coast both he and his popular partner (Hagan) ignored saddle horses and now drive around in a stylish vehicle. We like to see such advances."

By June, 1882, Dr. and Mrs. Hagan had moved to Honolulu where the doctor had his residence and office at 123 Fort Street. One of his cases was considered unusual enough to be described in the *Advertiser* of July 1, 1882, as follows: "A cure of an aggravated case of harelip on a 8-year-old boy was accomplished by Dr. Hagan. By paring the lip and making an incision on the inner side of it and then sewing it together with silver thread, Dr. Hagan . . . made a most successful restoration of the lad's lip."

That same year Dr. Hagan was appointed physician for the Insane Asylum and expended a great deal of time and care in planning a $6,000 addition to the institution. Early in 1883 when the new addition was opened an editorial in the *Advertiser* reported, "The arrangement of this room (a sitting room for the patients) particularly illustrates the happy taste and wise judgment of Dr. Hagan, who has indeed planned the whole structure."

The doctor was one of the prime movers in the organization of the George W. DeLong Post of the G.A.R. and was elected the first post surgeon in December, 1882. He was also a member of the Knights of Pythias. The Hagans took an active part in the social life of the day and were among the guests invited to the Coronation Ball of King Kalakaua, on February 20, 1883.

On July 15, 1884, Dr. and Mrs. Hagan left on the "Mariposa" for San Francisco. It was announced that he was going for a few months' visit and to improve his health, but where he became City Physician in 1887 and is credited wit hefficiently handling the smallpox epidemic of 1887-1888.

Dr. Hagan died in Los Angeles January 23, 1901, at the age of 68.

County Society Reports

Hawaii

The August 16, 1961, meeting of the Hawaii County Medical Society was held at the Hilo Hotel. Guests present were Dr. J. A. Rider, Asst. Clinical Professor of Gastroenterology at the University of California Medical Center; Dr. S. Kurohara, Dr. Best, and Dr. Bracher.

Dr. Haraguchi announced the resignation of Dr. W. N. Bergin as Councilor. Dr. Robert Miyamoto was recommended by Dr. Haraguchi to take the place vacated by Dr. Bergin.

President Haraguchi next read HMSA's letter to the Society informing the membership that a Kaiser Hospital may be built here in Hilo.

A letter from the ILWU was read by Dr. Haraguchi informing the membership that members visiting neighbor islands will be covered for emergency care under the "Plantation Plan."

Dr. Wipperman moved, seconded by Dr. M. L. Chang, that the Secretary inform Kona Inn that the County Medical Society does not endorse the letter written by Dr. J. E. Mitchell to Kona Inn recently in regard to the emergency care of visitors at the Kona Inn. The motion was carried unanimously.

Following the business portion of the meeting, Dr. J. Alfred Rider gave an interesting talk on the "Hypersensitivity Factors in Ulcerative Colitis."

* * *

The September 21, 1961 meeting of the Hawaii County Medical Society was held at the Naniloa Hotel. Guests present were Drs. Miller, Walsh, Bracher, and Best.

A short discussion was held in regard to the signing of individual contracts and society contract with HMSA. Several points were discussed by Dr. Lewis. A motion by Dr. Yuen, seconded by Dr. Lewis, that the Society accept the contract with HMSA was carried unanimously.

Dr. S. Haraguchi then read a letter from Dr. James Luce, an associate member of the Society, requesting clarification of his status since he has discontinued his residency training and is now working in Asia under Medico. Dr. Eklund moved, Dr. Oda seconded, that Dr. Luce should be kept on the associate membership during the duration of his duty in Asia under Medico. The motion was carried unanimously.

Following the business meeting Dr. E. W. Best gave an interesting and informative talk on "Determination of Enzymes in the Clinical Laboratory."

FRANCIS F. C. WONG, M.D.
Secretary

Honolulu

The meeting was called to order by President Hartwell at 7:40 p.m., July 11, 1961. Approximately 112 members were present.

Dr. Charles T. H. Ching and Dr. Mor J. McCarthy, new active members, were welcomed into the Society by Dr. Hartwell.

Dr. Verne C. Waite, elected representative of the HCMS Delegates, reported to the membership the proceedings of the last House of Delegates meeting. Dr. Waite presented the highlights and some of the actions taken by the delegates which he felt should be brought to the attention of the membership.

It was suggested by the Chair that for the purpose of facilitating the approval of the Bylaws, this meeting be turned into a Committee of the Whole and that Dr. Ando be appointed as chairman. It was moved, seconded and passed that Dr. Hartwell's suggestion be approved.

Dr. Ando assumed the chair and discussed briefly the Bylaws Committee's objectives and the major changes made in the Bylaws.

A full discussion was held on the amendments made to Chapters I through VIII, and the following actions were taken:

Chapter IV, Section 3: It was moved, seconded and passed that discussion of this section be postponed until our relationship with HMSA is clarified.
Chapter V, Section 3(c), Line 39: The word "Hawaii" in Hawaii General Surgical Society was amended to read "Honolulu" General Surgical Society.
Chapter V, Section 3(j), Lines 44 and 45 was amended to read "The president or the presiding officer, at his discretion, may designate a member of this Committee as a . . ."

Chairman Ando then entertained a motion "That the Committee of the Whole rise and recommend that the Bylaws be adopted as amended on the floor." It was moved, seconded and passed that the Committee of the Whole rise and report its deliberations to the membership. They were so reported by the chairman. The Committee of the Whole was then dissolved.

Dr. Hartwell stated that he would entertain a motion to adopt the Bylaws in toto. It was moved, seconded and passed that the Bylaws as amended be approved. The Chair then stated that these Bylaws are now adopted.

A resolution in memory of Dr. Kenneth On Ching was read by Dr. Randal Nishijima.

Dr. Nishijima moved the adoption of the resolution and requested that the membership stand for a minute of silence in memory of Dr. Ching. The motion was seconded and passed.

The chair presented, for those who were not familiar with the details, a recapitulation of the history of the County Society's relationship with HMSA and the events leading up to the termination of the master contract by HMSA. He then read excerpts from a letter from HMSA dated May 26 pertaining to several arrangements HMSA hopes to effect in future relationship with the Society; a letter to Mr. Oliphant, President of HMSA, from the Society dated July 7 requesting that provisions of the contract be extended for 60 days; and a reply from Mr. Oliphant dated July 11 stating that it would be impracticable to try to restore the former arrangements and that as much time and effort would be expended to accomplish that as would be required to work out a mutually satisfactory new relationship. He went on to state that efforts to solve the problem have been made by our Executive Secretary who has met with Mr. Veltmann and Mr. Yuen of HMSA on this matter and also Dr. Burden, President of the HMA, who has met with HMSA and who feels that a master contract with the State Association would solve the problem.

The Chair then opened the meeting to the membership for discussion but first asked the members to keep in mind several things: (1) That the situation between

(Continued on page 166)

Book Reviews

★Hospitals, Doctors, and Dollars

By Robert M. Cunningham, Jr., 268 pp., $6.95, F. W. Dodge Corporation, 1961.

Almost anyone will concede that the three subjects mentioned in the title of this book have enjoyed increasingly bad public relations in the past decade. Reading this book is no task. It is entertaining and delightful and excellent to read just for fun, and a perusal of it will give the reader an idea of why this depreciation in the public's eye of the virtues of Hospitals, Doctors, and Dollars has come about. Incidentally, many suggestions are made for improving this situation, although the difficulties of accomplishing this are great.

The book is a must for every hospital administrator, every hospital trustee, and every physician who has any interest in the public image of his profession.

H. L. Arnold, Sr., M.D.

Resuscitation of the Newborn Infant

Edited by Harold Abramson, M.D., 274 pp., $10.00, The C. V. Mosby Co., 1960.

This is a book that should be readily available in our delivery suites and in our newborn nurseries. It is primarily designed for obstetricians and delivery- and nursery-room personnel. After a difficult resuscitation of a newborn infant, the harried accoucheur could do no better than to read or reread the chapter entitled "Resuscitation Procedures in the Delivery Room." Evaluation and treatment of the newborn in the nursery is adequately handled; and the author's plea for a recovery room nursery for high risk infants is well taken. Those chapters dealing with physiology, biochemistry, pathology, and obstetrics shed little new light on the perplexing problem of the depressed newborn.

David A. Sinclair, M.D.

★Practical Diagnosis and Treatment of Liver Disease

By Carroll Morton Leevy, M.D., 336 pp., $8.50, Hoeber-Harper, 1957.

This neatly organized book of some 300 pages covers almost all of the knowledge of liver disease that might be useful to a clinician. There is good correlation between clinical observations and laboratory findings. The charts and diagrams are clearly presented and there are a number of colored photomicrographs illustrating the varied types of pathology. Clinical features of the various types of liver disease are frequently nicely brought out in the form of a case history, with a more detailed discussion following. Therapy is discussed in general principles but with enough detail to be of considerable value to the practitioner. In the discussion of therapy, there is a healthy avoidance of the usual long lists of remedies that have been advised at one time or another. A recommended addition to the library of a physician who would diagnose or treat liver disease.

Fred I. Gilbert, Jr., M.D.

★ Highly recommended.

Proceedings: Thirteenth International Congress on Occupational Health

By The U.S. Executive Committee of the Thirteenth International Congress on Occupational Health, 1005 pp., 1960.

This collection of papers on occupational health runs to 1,005 pages, plus a table of contents of 30 pages. The papers run the gamut from "Health and Safety Considerations at the Nuclear Power Stations of the Central Electricity Generating Board," through "Ist Epicondylitis Eine Berufskrankheit?" and "Les Critères Medico-Psychologiques de L'Aptitude des Travailleurs au Sahara" to "Wound Infection and Its Prevention in Industry." This volume could be a valuable reference work for the industrial physician were it not for the fact that there is no alphabetical index.

Frank H. Hatlelid, M.D.

★Biochemistry of Blood in Health and Disease

By I. Newton Kugelmass, M.D., Ph.D., Sc.D., 543 pp., $15.75, Charles C. Thomas, 1959.

All of us are aware of the rapid expansion of knowledge in the field of biochemistry as it affects medical practice. It is seldom, however, that we have the opportunity to gauge its almost explosive force. The appearance of this really superb text brings it home to us, however, since some of its sections were quite obsolete when the first copies rolled off the press. For example, the chapter on hemoglobinopathies does not include any references later than 1958, so that the new standardized system of nomenclature is not included, many new hemoglobinopathies are omitted, and discussion of the variations in the amino acid structure of abnormal forms is too superficial. In spite of this the chapter is a good one and merits careful study, since it gives a lucid summary of the work done in this field up to the time of preparation of the text. The separate subjects are illustrated with a host of lucid charts and diagrams. They explore almost every facet of the function of the blood as a living, dynamic substance. It deals not only with the adult, but the neonatal infant and child as well. Each paragraph is solid fare unrelieved by literary frills. Hence it is useful primarily as a reference work. It is heartily recommended.

Grant N. Stemmermann, M.D.

★Visual Aids in Cardiologic Diagnosis and Treatment

Edited by Arthur M. Master, M.D., and Ephraim Donoso, M.D., 216 pp., $10.00, Grune & Stratton, Inc., 1960.

It was with a great deal of interest that I read this volume describing some of the newer visual aids in cardiological diagnosis and treatment. The first chapter was indeed intriguing, describing the machine and physician in the present and future of heart disease. From there the book went into the pathological anatomy of surgically correctible congenital malformations. Auscultation

(Continued on page 174)

Notes and News

Names in the News

Dr. Harry L. Arnold, Jr., was named chairman of the professional division for the Community Chest campaign. He was also prominently headlined on his comments on public apathy when his 15-year-old son was attacked without provocation.

Dr. Sumner Price's report on nursing homes in the city made quite a splash.

Dr. Raymond Hiroshige reported the burglary of office equipment worth $1100. **Dr. R. Mookini,** also victimized, lost a typewriter.

Dr. Nils P. Larsen, commenting on USC's research on female hormones reducing male heart attacks, said "such results are not quite acceptable as yet."

Drs. Richard E. Ando and **Joseph T. Nishimoto** were mentioned as candidates for the State Board of Education.

Awarding a certificate of operation to the new Royal State Insurance Company made possible favorable publicity for **Drs. William Bergin** and **Edmund Lee.**

Dr. William Goodhue of Kauai made the news when a stevedore was killed in a fork-lift mishap.

Dr. R. Frederick Shepard received well-deserved plugs from a local columnist and publicity for the Rehabilitation Center was enhanced by the presence of a prominent entertainer as a patient.

Dr. and Mrs. Douglas Bell were kept hopping recently. The cause—two grandchildren visiting from Denver.

Dr. Blaine Boyden, son of **Dr. Webster Boyden,** former HMA president, got "hitched."

Dr. Walter Quisenberry reviewed his pet subject, ethnic relationships of cancer, at a recent Pacific Science Congress.

A fine panel consisting of **Drs. Waite, Judd, Richard Chang,** and **Tamura** did a swell job on KONA-TV on the subject of cancer.

CLARENCE JUNRO KUSUNOKI, M.D.
1910-1961

Clarence Junro Kusunoki was born in Honolulu on July 13, 1910. His parents were Torajiro and Kiku Kusunoki. He attended Royal Grammar School and McKinley High School in Honolulu, and then took his pre-medical course at the University of Hawaii from 1929 to 1933, where he received his B.S. degree.

Dr. Kusunoki graduated from the Washington University Medical School at St. Louis, Missouri, in 1937. He interned at the St. Francis Hospital at Peoria, Illinois, from 1937 to 1938, and The Queen's Hospital in Honolulu from 1938 to 1939. He then did some graduate work in public health at the University of Minnesota from 1939 to 1940, following which he returned to Hawaii and became Health Officer on the Island of Maui for three years. After that, he did general practice in Honolulu until 1945.

In 1945, Dr. Kusunoki went back to his alma mater, Washington University Medical School, and took postgraduate work in otolaryngology for six months and then served as a resident in otolaryngology at the Barnes Hospital at St. Louis, Missouri, until 1948. He then opened his office in Honolulu and continued to practice otolaryngology until his untimely demise.

In 1937 Dr. Kusunoki was married to Meredith Skinner in Peoria, Illinois. He is survived by his wife and two daughters, Ida Pat and Georgiana; a brother, Creighton N. Kusunoki; and two sisters, Alice S. Kusunoki and Mrs. Ethel Smith.

Dr. Kusunoki was stricken suddenly and died in a few hours at the Kuakini Hospital in Honolulu on August 13, 1961. A Requiem Mass was offered on August 19, 1961, at the Star of the Sea Church and the burial was at the Diamond Head Memorial Park in Honolulu.

Dr. Kusunoki was a member of the American Medical Association, the Hawaii Medical Association, the Honolulu County Medical Society, and the American Academy of Ophthalmology and Otolaryngology, and a Fellow of the International College of Surgeons. He was also a diplomate of the American Board of Otolaryngology. He was on the active staff in his specialty at Queen's, St. Francis, Children's, and Kuakini Hospitals in Honolulu.

The people of Hawaii lost a very capable physician in Dr. Kusunoki. To all of his friends his sudden demise was a great shock. He was one of Hawaii's most outstanding otolaryngologists.

To many, many people Dr. Kusunoki was known as an all-around athlete. He was a splendid basketball player in high school and college and an ardent bowler in recent years. He was well liked by his bowling colleagues because of his sportsmanlike and gentlemanly behavior, in addition to his great competitive spirit. In fact he became sick while bowling that fatal Sunday afternoon, when he drove his car to the Kuakini Hospital to be admitted there.

Dr. Kusunoki's passing is most keenly felt by the Kuakini staff and others closely associated with the institution. He had served on the executive committee of the medical staff and other committees, in addition to being chief of the otolaryngology service for many years. He was highly respected by his colleagues and the hospital staff for his professional ability and persistent interest in raising the standards of medical practice. Kuakini Hospital lost a faithful and an influential friend.

We extend our profound sympathy to his wife and daughters. May God bless Dr. Clarence Junro Kusunoki.

THOMAS H. MAEDA, M.D.

The August 31 issue of the evening paper carried a nice story of the agreement reached by the HMSA and the HCMS. Pictured signing the agreement were **Dr. A. S. Hartwell,** HCMS president; executive secretary **Dick Kennedy;** and **Joe Veltmann** and **Ted Oliphant** of the HMSA.

Dr. R. B. Cloward offered a $100 reward for the return of a lost camera.

Special editions commemorating the 50th Anniversary of the Chinese Chamber of Commerce featured many of our colleagues. Prominently featured were **Dr. A. Ng Kamsat,** general chairman of the Chamber's Golden Jubilee events; **Dr. Fred K. Lam,** for his former contributions to the study of the liver fluke; former HCMS presidents **Drs. W. K. Chang** ('32) deceased, **M. F. Chung** ('34), **Fred K. Lam** ('42), **Sam L. Yee** ('50) also HMA president, and **H. Q. Pang** ('60); **Dr. Richard K. C. Lee,** as director of the State Department of Health; also **Drs. Min Hin Li** and **Herbert Chinn** were mentioned. Somewhat embarrassing was **Dr. Robert C. H. Chung,** who was prominently mentioned. The Korean community temporarily lost a good man!!!

Dr. Edward Boone, Chairman of the Emergency Medical Service Committee of the HMA, has been spearheading disaster rehearsals aimed at developing mass medical care programs.

Drs. Duke C. Choy, John C. Milnor, and **George Ewing** spoke at the Mabel Smyth on causes of mental retardation.

The **Pacific Medical Associates–Henry J. Kaiser** feud was settled out of court recently. The amount or how the settlement came about was not disclosed. We are all curious!!!

Dr. Leubert Fernandez was happy and proud to learn that his son, a midshipman at the U. S. Naval Academy, was named to the Superintendent's List.

Dr. William N. Bergin chaired the recent District Information Institute in his capacity as the Rotary District Governor.

EDWARD S. KUSHI, M.D.
1906-1961

For the past 25 years, Dr. Edward S. Kushi has been in general practice. He was respected by his colleagues and loved by his patients. His sudden, untimely passing on September 5, 1961, was a great loss to the community.

He was born in Puunene, Maui, on November 20, 1906, the son of Sukehito and Uto Nakayama Kushi. He graduated from McKinley High School in Honolulu in 1925 and from the University of Hawaii in 1929 with an A.B. degree. He received his M.D. degree in 1932 from the College of Medical Evangelists in Los Angeles. Dr. Kushi interned at Santa Fe General Hospital in Los Angeles and did specialized training in children's diseases for 18 months at Hollywood Children's Hospital. He was a diplomate of the National Board of Medical Examiners.

For a few months in 1936 he practiced in Papaikou, Hawaii, associated with Dr. T. Kutsunai. However, his practice had been principally confined to Wailuku, Maui, since 1936. He was an active member of the Central Maui Memorial Hospital Medical Staff, Maui County Medical Society, Hawaii Medical Association, and the American Medical Association. He was also Assistant Maui County Physician from 1937 to 1943.

Dr. Kushi's life was one replete with numerous accomplishments, varied abilities, and multiple interests. He served on the Maui Police Commission from April 23, 1951, to August 2, 1954. During the trying years of transition from the old Malulani Hospital to the new Central Maui Memorial Hospital and the years that followed, he was a guiding light in effecting an orderly transformation and an eventual efficient, well-equipped, and modern hospital, for he was chairman of the Maui Hospital Managing Committee from July 1, 1949, to April 5, 1954. Those in the administrative, medical, and nursing fields can well understand and appreciate what this entailed. Perhaps this talent for organization and administration evolved from his experience of serving in the Medical Corps of the Hawaii National Guard from June 2, 1947, to June 8, 1951, when he retired medically as a Captain.

Although he was not a participating athlete, he was a lover of all types of sports and contributed much to them. His greatest inclination swerved toward football. He organized and owned the Cardinals football team in 1944. This team was supreme, winning many games in 1944 through 1946, promoting and adding new interest to senior league football. For many years he has volunteered his services to the Baldwin High School football team as its physician, treating injuries at the games and at the same time giving inspiration to the players. Boxing fans and boxers will also miss his charitable actions and services from ringside, for he gave much of his energy and skill as boxing physician. The absence of this familiar figure will be felt at basketball and baseball games, as well as on the golf course.

Being a man of benevolence and generosity, he had played host to many service personnel during World War II years, offering them comfort and entertainment by actually converting his home into a veritable U.S.O. His home was a home away from home for many servicemen. This they will never forget.

Possessor of a rich tenor voice of clear quality, he was always ready for a song as he strummed his own accompaniment on his guitar. His perennial and familiar strains of "Memories" and "Up The Lazy River" will be missed at our annual Hawaii Medical Association meetings.

Truly he was a kindly, friendly, jovial, and versatile man. Those in all walks of life who had the pleasure of his association have known him to be a diligent physician, enthusiastic sportsman, and a loyal friend.

Left to mourn his passing are his two sons, Gerald and Edward, Jr., two brothers, Dr. Harold S. and Sukeyoshi Kushi, and a sister, Mrs. Chiyo Yogi.

A. Y. Wong, M.D.

Dr. I. Katsuki, 96-year-old father of three local physicians, was prominently mentioned in a recent article on the bubonic plague epidemic of 60 years ago.

Keo Nakama's great feat of swimming the Molokai Channel from Molokai to Oahu was helped by **Drs. Coolidge Wakai** and **Nobuyuki Nakasone.**

Dr. William W. L. Dang was named new chairman of the executive committee of the Oahu unit of the American Cancer Society.

Dr. Fred Giles urged epileptics to stay out of the water after a recent incident in the drowning of an epileptic student.

Congratulations

It's twin girls to **Dr. and Mrs. Robert A. Nordyke,** and one girl to **Dr. and Mrs. Donald Smith.** The jackpot to **Dr. Albert Ishii,** a boy after three girls, and a boy to **Dr. and Mrs. Noburo Oishi.**

To Hawaii's pathologists who were hosts to the Pan Pacific Pathology Congress, October 8 to 14. Sessions were held at the Sheraton Meeting House and at Tripler Hospital. Some 135 attended from the mainland U. S., Canada, Australia, New Zealand, Japan, and the Philippines. **Dr. G. N. Stemmermann,** Secretary, Hawaii Society of Pathologists, was in charge of arrangements which received wide acclaim from the visitors. **Dr. I. L. Tilden,** President, said virtually all the delegates attended all the meetings instead of using Waikiki Beach as a laboratory.

New inductees to the American College of Surgeons: Honolulu—**Drs. Thomas S. Bennett, Raymond G. Chang, Carl B. Mason, Satoru Nishijima, Niall M. Scully.** Hilo—**Dr. Harold Lewis.**

To **Dr. and Mrs. Harry L. Arnold, Sr.,** who celebrated their golden wedding anniversary October 7.

Dr. Dean M. Walker, newly appointed first medical advisor to the State Workmen's Compensation Division.

Mr. Howard W. Pearce, new executive secretary to the HCMS. He formerly served at the San Joaquin County Medical Society and comes well recommended. Good luck, Howard!

Drs. Min Hin Li and **Chisato Hayashi,** directors of the new Pacific Guardian Insurance Company.

Drs. David Pang, A. Ng Kamsat, *et. al.*, for initiative in starting the Hale Nani Nursing Home.

Obituaries

The "grim reaper" keeps taking his toll of our colleagues. We note with sadness the loss of **Dr. C. J. Kusunoki** (ENT), who passed away very suddenly and unexpectedly at age 51.

Maui physicians lost a dear friend and colleague with the passing of long-time practitioner and sportsman, **Dr. E. S. Kushi.**

Hawaii County also suffered a great loss in **Dr. T. Kutsunai,** who after 30 years of practice, quietly passed away at The Queen's Hospital.

Of interest to the profession here was the news of the death of **Dr. I. McQuarrie** of Minnesota, formerly Director of Medical Education at Children's Hospital.

They will all be missed.

Travel News

Dr. L. Q. Pang recently presented papers at the AMA meeting in New York and to the Vienna State Hospital in Austria. He also visited clinics in Germany and attended the International Ophthalmological Society meeting in Paris. His wife Tita accompanied him.

Dr. and Mrs. Bob Millard left for a three-month tour of Europe. Bob will attend meetings in Vienna.

Dr. Rodney T. West took in the Ob-Gyn meeting in New York.

Major Shigeru Horio (reserve) attended the 14th Annual Symposium on pulmonary diseases at the Fitzsimons Hospital in Denver.

Dr. and Mrs. Harold Sexton spent time in Chicago and Mexico after meetings in New York.

A tour of South America was in store for **Dr. and Mrs. L. Clagett Beck.** Dr. Beck served as a delegate at the general assembly of the World Medical Association.

Dr. and Mrs. H. J. Lambert left for Yosemite and some sightseeing.

New Affiliations

Dr. Harold Y. Nakanishi (pediatrics) is in association with the Central Medical Clinic at 1481 So. King Street.

Dr. J. C. Carson is located in Kaneohe as **Dr. Fred Reppun's** new associate in general practice.

Dr. Charles T. H. Ching (internal medicine) has opened his office for solo practice at 1507 So. King Street.

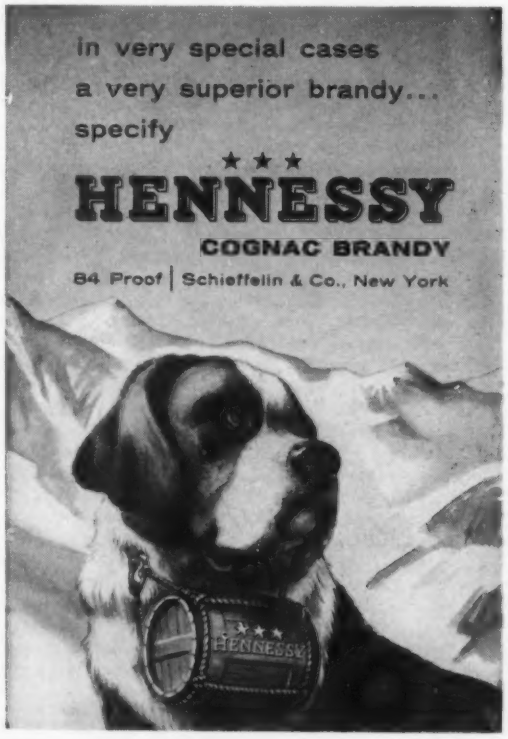
Drs. Wallace W. S. Lou and **Florence J. Chinn** have moved to 1531 So. Beretania Street.

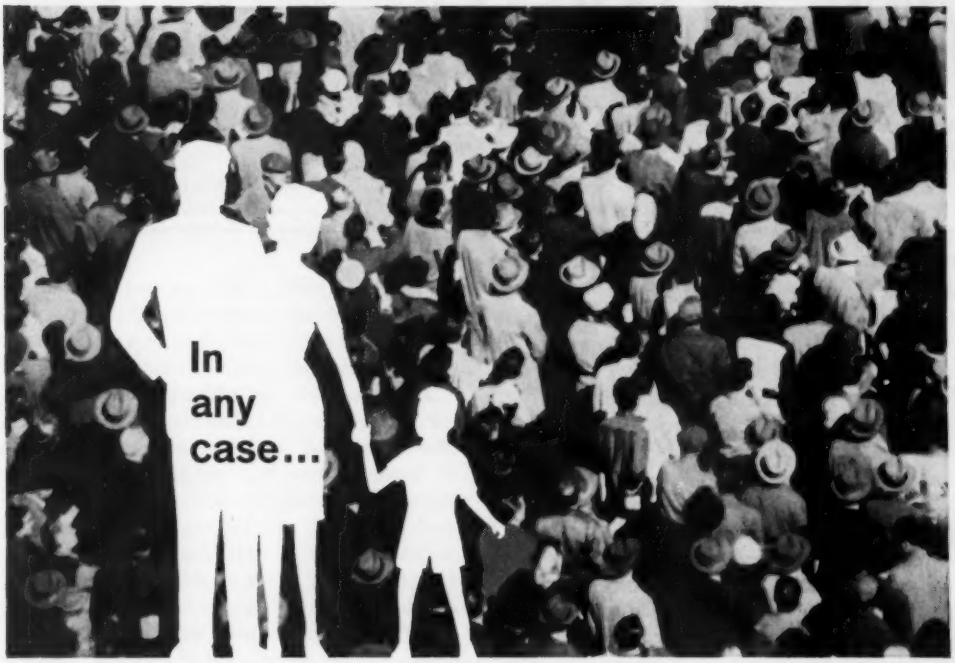
Drs. Verne C. Waite, R. S. Omura, and **C. S. Sakai** have relocated to the fifth floor at 1441 Kapiolani Blvd.

Dr. C. F. Chang and **Dr. Albert K. T. Ho** have also gone to 1441 Kapiolani Blvd.

The Dickson-Bell combine has made formal announcement. In their new offices on the fourth floor at 1441 Kapiolani Blvd. are **Drs. Dickson, Ed Cushnie, Chung-Hoon, D. B. Bell, John Bell, Oakley, Sinclair,** and later, **D. B. Bell II.**

Dr. Anna Marie Brault has joined the Medical Department of the Straub Clinic.





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Official Publication of the Hawaii Nurses Association

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ROSE ANN POYZER, *Executive Secretary*

*New Community Resource For The Disabled**

Disabled adults need not be completely dependent. No matter how seriously crippled, most of them can be helped to reach their maximum rehabilitation potential. They can be taught to care for their toilet needs, to move about home, and to feed or dress themselves. They can become independent of attendant care.

Based on this premise and the successful experience of some mainland communities, several agencies here, led by the Division of Vocational Rehabilitation, are sponsoring a special project to help disabled adults attain self-care ability in daily activities and where possible to become fully or partially self-supporting. The project called the Independent Living Project is one of several similar plans in the country supported partially by funds from the U.S. Office of Vocational Rehabilitation.

Working on the project are two teams. The project team consists of a physiatrist, Dr. R. F. Shepard; a coordinator, Mrs. D. Melleney; a Public Health Nurse, Mrs. Grace Smith; a physical therapist, Mrs. C. Dasinger; an occupational therapist, Mrs. D. Darmstandle; and a vocational rehabilitation councillor, Miss J. Nakasone, who also serves as the medical social worker. The second team is a consultation team composed of physicians. On this team are specialists in orthopedics, neurosurgery, psychiatry, internal medicine, physical medicine, and general practice. This panel provides medical direction to the project.

Patients referred for services are evaluated by the panel of physicians or by the project team to determine to what level of self-care they can be brought. Then, in consultation with the patient's physician, a treatment is outlined.

Treatment services are provided in the patient's home, nursing home, hospital, or the Rehabilitation Center of Hawaii, depending on the needs of the patient. Through the rehabilitation treatment phase, the patient remains under the supervision of his own physician.

To be eligible to the project the patient must (1) have the approval of the attending physician; (2) be over 21 years of age; (3) be chronically disabled by serious illness or accident; (4) be unable to carry out activities of daily living such as eating, dressing, personal hygiene, or just moving about; and (5) have foreseeable self-care goals.

Among those receiving help are a man, age 49, disabled due to a stroke and fractured femur, and a woman, age 56, crippled from rheumatoid arthritis. At the time the male patient was referred, he had been in a nursing home for three years with attendant care provided. After three months of treatment at the Rehabilitation Center and with the proper prosthesis and cane, he was placed in a boarding home, no longer needing nursing or attendant care. Whereas he might have required confinement indefinitely in a chronic illness facility, he is now able to care for his needs, including the financing of boarding care out of his monthly disability check.

The 56-year-old woman suffered from severe contracture of the fingers and knee at the time she was referred to the project team. She was so weak she could not manipulate her wheelchair. After four months of intensive treatment in a chronic disease facility, she learned to walk with crutches, was able to dress herself, cook, and do the dishes. A ramp was built to enable her to get from the street to her home. She is no longer dependent on her working daughter, with whom she now lives, for her daily needs. Both of these patients are continuing to be followed by the team to check on progress.

The rendering of rehabilitation services to individuals is only one phase of the project. It has as its main objective the demonstration of the value of comprehensive rehabilitation services to aid the disabled and chronically ill. The study of various aspects of community rehabilitation programs such as costs, methods, techniques, and goals is also another objective.

The program has accomplished much in the area of education for professional personnel working with the disabled. The evaluation sessions, conducted at the Queen's Hospital the first and third Thursdays of each month at 12:30 P.M. by

*Condensed from an article for the *Health Messenger* by Miss Marion Akamine.

the panel of physicians, have been effective in extending rehabilitation concepts into the private practice of medicine. Nurses and other paramedical people are all invited to attend when they are able.

The rehabilitation team, working with nursing home and hospital personnel in carrying out the recommendations on specific patients and in teaching rehabilitation procedures, helps to improve the rehabilitation capacity of these staff members. A three-week training course for supervising nurses was recently completed at Maluhia Hospital. These supervising nurses will in turn train their nurses and aides in rehabilitation techniques.

Similar training sessions are planned for nursing homes. Another important part of the project is the provision of consultation and advice on rehabilitation programs to institutions which have referred patients. Leahi and Maluhia hospitals and Aiea Heights Rest Home are among those institutions receiving such help.

Actively participating in the sponsorship of the project are the State Department of Health, the Rehabilitation Center of Hawaii, and the Hawaii Medical Association. The Chronic Disease Branch of the Department of Health has assigned a public health nurse to serve as nurse member of the project team. Also, this branch and the Rehabilitation Center of Hawaii are making the part-time services of a physiatrist available. The Rehabilitation Center of Hawaii is making office facilities available. The Hawaii Medical Association provides medical guidance. Physicans and others interested in referring patients should call:

Mrs. Doris Melleney, Coordinator
Independent Living Project
Division of Vocational Rehabilitation
Telephone: 586-437
or write to
Division of Vocational Rehabilitation
P. O. Box 2360
Honolulu, Hawaii

From 1900 to 1961 AJN Success Story

When the postman brings your crisp new copy of the latest *AJN*—and you leaf through deciding which article will be first to receive your attention —do you ever wonder *how it all started?*

It was just before the turn of the century that the newly-organized Associated Alumnae of Trained Nurses (predecessor to ANA) decided that the nursing profession needed its own journal. Determined that it be managed, edited and owned by nurses, the association appointed a committee "to consider ways and means of publishing a magazine to be the official organ of the society."

Chairman of this committee was Mary E. P. Davis, who became the driving force behind the establishment of the *AJN*. Committee members were Harriet Fulmer, M. Adelaide Nutting, Sophia F. Palmer, Isabel Hampton Robb, and Margaret W. Stevenson. All of these remarkable women had other professional responsibilities. Planning for the *Journal* had to be done in their spare time and mostly through correspondence!

The complete story of their early struggles to establish a firm foundation for what is now the American Journal of Nursing Company (publishing *The American Journal of Nursing, Nursing Outlook, and Nursing Research*) should make every nurse proud that the profession can claim such dedicated and visionary heroines. (*The Story of the Journal Company*—published in 1960 on the *Journal's* 60th birthday—can be requested free of charge from *AJN*.)

Here's How to Make New Section Choice

Looking for a section to call your own?

Neither title of position nor employing agency alone will assist you in choosing section membership appropriate to your area of nursing practice. Consider instead your functions and ANA section membership rules.

ANA section membership rules are based on area of practice and also provide for those nurses who have retired from active practice.

Rules of several sections were liberalized in 1960 so that some nurses will probably be eligible for membership in more than one. Within the limits set by the rules, these nurses may select membership in a section with which they most closely identify.

Most members of the former Special Groups Section may now choose new section affiliation without difficulty. For example—

Are you a professional employee of a state board of nursing? Then you should belong to EACT because a primary function is that of giving consultation on nursing education.

Are you on the executive staff of an American Red Cross Nursing Service? Then you are primarily concerned with providing public health nursing service, and you can join the Public Health Nurses Section.

If you are a guidance counselor in a school of nursing, your functions are related to nursing education, and you may join EACT.

If you are a registrar in either a professional or commercial nurses registry, you are eligible for membership in the new CESR Section.

Are you employed to give intravenous, oxygen, or allergy therapy? Do you work in intensive care or neuropsychiatric units? You may choose to join

either the Nursing Service Administrators or General Duty Nurses Section depending on your functional role.

Writers and editors of nursing or health journals are eligible to join EACT.

Nurses in hospital libraries, housekeeping departments, dietary services, and record rooms are not considered to be in active nursing practice. If you are so employed, then you should join the section corresponding to your last employment in nursing.

Mary M. Roberts Fellowship

Effective at once, the Fellowship Committee of the American Journal of Nursing Company is accepting applications for the 1962 Mary M. Roberts Fellowship in Journalism. The deadline is February 1, 1962.

The Fellowship is awarded on competitive basis. Applicants, who must be members of the American Nurses' Association, between 25 and 55 years of age and with a baccalaureate degree, are asked to prepare and submit an original manuscript on a subject of significance to nursing.

The award winner receives a one-year study program at a recognized school of journalism and up to $3000 to help defray expenses beyond tuition. After the year of study is completed, the winner is also offered a three-to-six-month internship on the editorial staff of the American Journal of Nursing Company.

Established to provide specialized training in journalism to nurses with writing talent, the Fellowship is a tribute to the late Mary M. Roberts, editor emeritus of the *American Journal of Nursing*.

For complete details of the competition and application forms, interested nurses are urged to write: Mary M. Roberts Fellowship Committee, American Journal of Nursing Company, 10 Columbus Circle, New York 19, N. Y.

Shortage of Nurses?

The term "shortage of nurses" has become "almost proverbial" tending to overemphasize numbers at the expense of other factors involved in the problem, according to the 1961 edition of *Facts About Nursing*, just published by the American Nurses' Association.

Most measures of need are based on ratios of personnel to population, the publication notes, rather than on the number and kinds of personnel which best meet the needs of patients and others requiring health care. Very little research has been done on that qualitative aspect of nursing care.

Numbers of professional nurses are increasing proportionately much faster than the population. The estimated 504,000 professional nurses employed in the United States in 1960 reflect an increase over the past ten years almost double that of the increase in population. This total includes at least 90,000 nurses who are working only part time.

Facts suggests that the return of inactive nurses to the profession, either full or part time, may be one partial solution to the so-called shortage. Other solutions are "better and perhaps different utilization of nursing personnel and improvement of educational preparation" as well as continued efforts to attract qualified young people into the field.

Though the majority of nursing students still receive their basic preparation in hospital schools of nursing, there has been a steady rise in the numbers receiving basic education in colleges or universities, and more nurses are obtaining advanced education. Graduate nurse students granted academic degrees in nursing in 1960 totalled 3,723 compared to 2,317 in 1951.

At present, the publication states, less than two per cent of employed professional nurses have master's degrees and only about seven per cent have baccalaureate degrees.

About 99 per cent of registered nurses are women, and 54 per cent of them are less than 40 years old, the publication reports. The majority are married; only about 31 per cent are single.

New data on salaries and employment conditions of nurse educators shows a median annual salary of $5,150 for teachers and administrators in professional educational programs. Median starting salary for a teacher with a baccalaureate degree is $4,500.

Results of 1960 surveys conducted by the U.S. Bureau of Labor Statistics in 15 metropolitan areas and reported in *Facts*, show weekly salaries of general duty nurses in nongovernmental hospitals ranging from $67 in Atlanta to $85 in Chicago and Los Angeles-Long Beach. Those in top nursing positions—directors of nursing services—received weekly earnings varying from $97 in Cincinnati to $152 in San Francisco-Oakland.

Facts About Nursing is the most comprehensive sourcebook published of facts and figures on nurses and nursing. It includes information on national distribution of professional nurses, education, economic status, and data on allied nursing personnel.

Nurse Volunteers Urgently Needed For National Defense

The American Nurses' Association is cooperating with the military services nurse corps in their current efforts to reach and maintain the strength

necessary to support increased military needs called for by President Kennedy.

All members will be interested in the following information concerning current nursing requirements of the armed services:

Army Nurse Corps: The Office of the Surgeon General reports "an immediate critical need for 500 additional nurses to sustain our medical care program. Expansion of the Army and stepped-up training means more soldier patients and the strength of the Army Nurse Corps must keep pace." The army hopes to meet the immediate requirements through volunteer nurses, mainly young women and men who have not yet served in the Armed Forces. By obtaining volunteers, they feel a more serious disruption of civilian and government hospitals can be avoided. Many of the reservists subject to recall hold key positions in these hospitals. "The greatest need is for general duty nurses," said Lieutenant General Leonard D. Heaton, Army Surgeon General. "Critical requirements also exist for qualified individuals in the clinical fields of operating room anesthesia, and neuro-psychiatry. Inquiries should be addressed to Colonel Carrie E. Barrett, ANC, Chief, Nursing Service, U.S. Army, Tripler General Hospital, or to the Office of the Surgeon General, U.S. Army Nurse Corps, Washington 25, D. C.

Air Force Nurse Corps: Nurse volunteers are needed, although the number has not been specified. Principal utilization, it is anticipated, will be in general staff nurse positions. Inquiries should be addressed to Air Force Nurse Corps, Office of Surgeon General, Headquarters, USAF, Washington 25, D. C.

Navy Nurse Corps: At present the Navy Nurse Corps does not have an allowance for additional input of Navy Nurse officers. Inquiries should be addressed to Director of Navy Nurse Corps, Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

No history of war or campaign for national preparedness involving the United States would ever be complete without mention of the vital role played by the American nurse. Professional nurses have always rallied in gratifying numbers to the service of their country in time of need or crisis. Reflecting this attitude on the part of their members, national nursing organizations have increasingly concerned themselves with the problem of providing and training nurse manpower to meet emergency demand.

American Nurses' Association activities toward that end during World War II and the Korean conflict culminated in 1950 with the appointment by the ANA Board of Directors of a special committee on nursing resources and military nursing needs. In 1953 the name of this committee was changed to the ANA Special Committee on Nursing in National Defense. The committee has prepared and brought up to date a statement of assumptions, purposes, and functions and in 1960 issued the document, *The Role of the Nurse in Disaster*. It has also been responsible for arranging conferences with the U.S. Office of Civil and Defense Mobilization and allied agencies, special CD courses for nurses, and programming meetings on disaster nursing at ANA conventions.

A Time of Decision

An important decision delegates to ANA's 1962 convention will be asked to make is whether or not to increase ANA dues from $7.50 to $12.50, effective January 1, 1963. All ANA members will want to give the question serious thought and make their opinions known to the delegates representing them.

Why does the ANA Board of Directors believe that a dues increase will be necessary by 1963? A 59 per cent increase over the past three years in the costs to ANA of basic operations (rent, electricity, utilities, insurance, postage, dues to other organizations, salaries, etc.) is only one factor. The most important consideration is the vital need for a stepped-up program—the expansion of services to each nurse, to the profession as a whole and to society. A stronger, more influential professional organization is a must if nursing is to meet its responsibility in regard to the expansion and improvement of health care.

It is a time of opportunity. Health care has increasingly become a topic of major national concern. Nursing, as the largest health profession in the country, must be ready to contribute to decisions that will be made about patient care. Professional nurses have everything to gain—improvement of individual practice and professional status, more equitable remuneration, and a sense of satisfaction for having been instrumental in achieving higher standards of professional practice-for better patient care. This is a crucial period for nursing. ANA, as the professional association, must take steps now to ensure nursing's progress. And it must have the resources and facilities to do the job—to take the lead; to be the voice of professional nursing.

What are some of the new programs, expanded activities that are needed?

(1) An expanded program of clinical emphasis. More conferences and institutes, geared to the interests of members in all clinical areas, held in different parts of the country so that all members can easily attend.

(2) Establishment of official standards of nursing service and education which would allow nurses to function more effectively and ensure the most effective utilization of professional skills and knowledge.

(3) An expansion of ANA contacts with federal government officials, health groups, other national and international organizations and the public.

(4) An increase in contacts with opinion-making media (the daily press, magazines, radio, and television) in order to tell nursing's story to the general public.

(5) Additional emphasis on research to supply nurses with guidance for improving nursing service and education.

(6) More guidance and counsel for nurses seeking to improve economic and working conditions.

(7) More direct assistance from ANA to state nurses associations and thus to members through expanded and specialized field service.

(8) A more convenient, centralized method of dues collection with possible installment plan of payment.

All of these things are now under consideration. However, they require much greater resources than ANA now has.

Is a stronger profession, a more vital association important to you? Is your future in nursing a matter of real interest and concern? ANA members must make the decision now—for themselves and for the future of professional nursing.

American Nurses Foundation

During the past year, most states have been engaged in fund raising activities for the $1 million campaign of the American Nurses' Foundation. Campaign plans were announced at last year's state annual meetings. This year, some ANF state co-chairmen will report on their state and district campaign progress during the meetings.

Mrs. Katharine Densford Dreves, the National Campaign Co-Chairman, and Miss Agnes E. M. Anderson, ANF President, have urged that each ANA and ANF representative who attends state annual meetings should give a brief progress report on the ANF campaign.

Miss Phyllis A. Toner, the campaign director, will help you with any information you need for your presentation. We very much appreciate your good help.

The national campaign seeking a minimum of $1 million for an expanded research in nursing program of the American Nurses' Foundation has been under way for a year. To reach state campaign quotas, the state and district nurses' associations have adopted a slogan of "Give or Get $5" for each member.

Six committees have already exceeded their quotas: Delaware, Hawaii, Maine, Oklahoma, South Dakota, and the Virgin Islands.

Sixteen more states have secured 50 per cent or more of their campaign quotas: Alaska, Arkansas, District of Columbia, Georgia, Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Montana, Nebraska, North Carolina, North Dakota, Virgina, West Virginia.

This state is among the leaders! We are hoping that all states will report 100 per cent at the 1962 ANA Biennial Convention in Detroit.

Campaign receipts now total $350,000 and they represent the outstanding efforts exerted by over 20,000 nurses who are serving on 47 campaign committees across the nation. Nurses have responded to the national appeal by giving unsparingly of their valuable time, energy, and financial resources. Warmest thanks is expressed to them, for without their help this progress report would not be possible.

The funds secured have enabled the Foundation to begin parts of its expanded program in the form of research grants, consultant and information services.

The first research grant has been awarded to Rancho Los Amigos Hospital in Downey, California, for a year's study of nursing in relation to the rehabilitation of incontinent elderly patients.

Research consultant services have begun with the appointment of Dr. Myrtle Irene Brown, R.N., as research consultant in nursing. Dr. Brown will travel across the country to discuss research findings and to guide nursing leaders in research projects.

The first monograph—made possible by campaign funds—appeared in August. It is a report by the Boston University Human Relations Center staff on an outpatient nursing study which started under an ANF grant.

The Foundation is beginning a service for abstracting reports of nursing research.

ANF staff will report at workshops in Indiana and Michigan in October on the public health nursing study of ANF. The staff will present a report on ANF's cardiac nursing project at the convention of the American Heart Association at Miami Beach, Florida, in October.

And this is just the beginning of a series of programs which mean better nursing care through research. There is help you can give to the Foundation. If you have not made your contribution to ANF, you are urged to do so now. Also, if you know of anyone who may be interested in supporting this program, try to encourage a gift to the ANF campaign. Perhaps you can serve on your district campaign committee. Simply let your state leaders know of your interest. We nurses have most at stake in ANF's expanded program and we welcome your help wholeheartedly!

* * *

The Dynamic Nurse-Patient Relationship

By Ida Jean Orlando, R.N., M.A., 91 pp., $2.00, G. P. Putnam & Sons, 1961.

The National Institute of Mental Health of the U.S. Public Health Service awarded a five-year project grant to the Yale University School of Nursing in 1954. This is a report of the study.

I believe that this book very adequately fulfills the purpose for which it was written—to offer the professional nursing student a theory of effective nursing practice. An application of this theory will help her develop her professional role and identity. Actual case situations are given to examine and further help the reader to identify professional nursing function. An analysis of the nursing situation is made, and the principles of effective nursing practice are then formulated.

The theory advocated in this book can be most helpful and warrants further investigation by nurses.

(Mrs.) Rose Ann Poyzer, R.N.

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HAWAII TECHNOLOGISTS' BULLETIN

Official Publication of the Hawaii Society of Medical Technologists

BERYL UYEHARA, *Editor* MAX BOWMAN, *Associate Editor*

October Meeting

The HMTS members, at their October dinner meeting, were honored with the presence of guest speaker, Dr. Donald A. Nickerson of Salem Hospital, Salem, Massachusetts, who spoke on the different uses of radioactive isotopes. Dr. Nickerson was recently elected President of the American College of Pathology.

Many thanks to Louise Wulff and her crew who were in charge of the arrangements. They donated their time to sew leis, greet the incoming pathologists at the airport, and help out at the Filipino festival.

*Prove and Improve Your Blood Bank**

In the relatively short period of time that blood transfusions have become of major importance in the field of medicine, much has been done to analyze the component parts of whole blood to give full significance to the word "compatibility." Compatibility is defined as the capability of existing together, a definition which is simple in meaning but sometimes complex in its execution. It is indeed the most significant of all terms applied to blood banking. Whether the question at hand involves one or 100 transfusions, from the newborn to the aging patient, compatibility means life.

We must encourage and support all blood banking societies in order to acknowledge the boundless research that is making knowns of unknowns, and we must acquaint ourselves with the problems that are being encountered all over the world. Pasteur stated in 1873, "The benefits of science are not for science but for humanity." A technologist must never feel that nothing exciting ever happens in his blood bank.

Today there are many reference laboratories willing and anxious to help us with our problem bloods. There are meetings and discussions on techniques, protocol, new factors, new theories; there are films, bulletins, journals, and books containing excellent material vital to every blood bank laboratory. These are the contributions that will help "prove and improve your blood bank."

The problem I would like to discuss concerns the most basic of all blood banking procedures, that of ABO grouping. According to statistical reports, ABO incompatibility reactions occur at a rate of 1 per 4000 transfusions. Laboratory standards are higher than ever before and grouping serum has never been more specific or avid; yet, technical errors in relation to the ABO system, as well as clerical errors, have gradually increased. A blood sugar may, by one method, be estimated at 80 mg%, and by another, 120 mg%; a white blood count of 11,900 may, after being repeated, be 10,800; or a urine culture may be said to contain E. coli when actually it contains Aerobacter aerogenes. These discrepancies are relatively insignificant in the diagnosis and treatment of the patient. Yet, can we, in the same breath, say that a patient may be group A by one method and group O by another? In our field there can be no average or compromise. The following paragraphs will reveal some observations, a few experiences, and my own impressions of how we all help to improve the standards of blood banking from both the technical and clinical points of view.

Despite state rules and regulations, many blood banks continue to omit back-typing on all blood specimens. It is the opinion of some that the use of group O serum is adequate as a check on the direct grouping method of known anti-sera and unknown cells. My impression is, however, that although this serum is a valid test for screening O individuals, it must not be substituted for the standard back-typing procedure using known A and B cells against unknown sera. If X cells are not agglutinated by group O serum, these cells are then classified by many as type O. On the other hand, if the cells are agglutinated, they may be classified as either A, B, or AB. This means that approximately 45 per cent of all groupings are being confirmed and about 55 per cent are almost completely dependent upon the direct method. Back-typing not only confirms the direct grouping method, but in addition reveals the existence of weak sub-groups of A. It also detects the absence of iso-agglutinins normally present in plasma, a condition in which agammaglobulinemia may be suspected. Group AB individuals are the exception since they normally lack anti-A and anti-B agglutinins.

In many hospitals repeat blood donors and pa-

* Reprinted from the Massachusetts Journal of Medical Technology. Fall 1960, Volume 3, Number 1.

tients, who are readmitted to the hospital, are not regrouped. Old files are being referred to and these new blood specimens are being classified on the basis of records of their last donation or admission only. I strongly recommend the reference to previous information on donors and patients; however, not without correlating the actual grouping of the fresh specimen with the grouping indicated on the record.

I will cite an experience to stress the importance of the statement I have just made. I was recently given a sample specimen of blood on a patient who had been transfused at our hospital a year ago. I grouped the new specimen as B Rh positive, and then referred to her previous card. This card stated that she was O Rh negative. My first impulse was to obtain another specimen from the patient, who was situated in a semi-private room. When I told her I had come to take blood from her arm, she said that she had been expecting me. She said that a tubeful of blood had been taken from the woman in the next bed and that she had expected someone would soon be taking hers. The sample I had drawn from the correct patient was group O Rh negative, and her roommate, on whom no orders had been written, was group B Rh positive. This, of course, was gross negligence and inexcusable since our outlined methods of patient identification are extremely thorough. Everyone has the following unequivocal identifying information available to him: (1) a stamped blood bank requisition stating the patient's complete name, case number, service, ward date of admission, and room number; (2) a prelabeled tube bearing the patient's full name, case number, ward, and date; (3) a wrist band with the same information; (4) a card at the head of the patient's bed again with this information, including her home address; and (5) her chart at the foot of the bed. With all of this, we received blood from the wrong patient. My point here is not to condemn or exaggerate the carelessness of any hospital personnel, but rather to demonstrate a human error that with every conceivable precaution was still committed. This patient received nine blood transfusions in the operating room. Here the reference to her previous card unquestionably saved her life.

Just recently I learned of a blood donor who had been donating blood faithfully at a well-known hospital since 1947. He was grouped as A Rh positive, and all records indicated that his blood had been given to A Rh positive recipients. Quite by chance, a student selected a number of random specimens on which to practice his technique on back-typings, that is, using unknown sera against known A and B cells. Upon checking the records to confirm his results, he found the serum of the faithful 1947 blood donor had strongly agglutinated both A and B cells. When he tested the cells against anti-A and anti-B sera, he found no agglutination. Much to the embarrassment of the chief technician, the donor was recalled, regrouped, and reclassified as group O. The routine cross-matching procedure consisted only of the major tube, so that, obviously, with this method, it was impossible to observe any minor incompatibilities. The importance and primary function of the minor cross-match is to determine homologous blood group compatibility. The minor tube must never be omitted in the cross-matching technique.

Another routine that should be strictly adhered to is the regrouping of bloods borrowed from other institutions and national organizations. How tempting it is to accept bottles and pilot tubes with the blood group neatly labeled in bold print. Yet, in our experience, we have found that two per cent of our bloods acquired from outside sources have been erroneously grouped. I would like to qualify a statement I made concerning neatly labeled blood bottles and pilot tubes. Unfortunately, there is no uniform tagging system for blood identification, and so, as a result, tags vary in size, shape, color, and information. Each blood bank, is, of course, accustomed to its own system, but occasionally we are overtaken by the monotonous routine of labeling these bottled and pilot tubes, and we tend to become careless in their identification. Recently, to demonstrate my point, we borrowed a unit of blood that had two stickers on it, one labeled A and the other O. There is no excuse for illegibility and incomplete information on donor tags. Groupings should never be corrected on labels. For example, an O should never be converted to an A, or an A to a B. Rather an entirely new label should be prepared and the incorrect one removed and destroyed. Grossly hemolyzed pilot tubes are unsatisfactory for accurate compatibility testing and should not be used. If dried blood covers any part of the donor tube number, the label should be made over without question. Guesswork is conducive to errors, and errors to fatalities. In conclusion, it can be seen that much depends upon the role of the technologist. His absolute attentiveness to the simple practices or routine procedure in existence in his hospital, and his insistence on this same attention by all other persons involved in blood transfusions, will assure the highest standards of safety to the patient and the greatest returns of efficiency to his hospital.

IDA MALOOTIAN, B.B. (ASCP), *Supervisor*
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COUNTY SOCIETY REPORTS

(Continued from page 152)

the HCMS and HMSA is being negotiated at the staff level, (2) that we can treat HMSA like any other insurance company, (3) we can make a new contract, or (4) we can suggest that the State Association take over the contract negotiations on a state level. The Chair also called on several doctors present to express their opinions on the matter.

A lengthy discussion followed during which Dr. Ando proposed the following resolution and moved "that the HCMS reaffirms to its membership that the approval of HMSA as a Blue Shield Plan and the signing of individual contracts with HMSA be deferred until negotiations by our Society are concluded with HMSA to the general satisfaction of the Society." The motion was seconded. Following further discussion, Dr. Ando's resolution was voted on and was carried. In answer to a question as to what the Society plans to negotiate in the new contract the Chair read off a list of tentative proposals. It was suggested to the negotiating body that they should obtain something that is equitable to all and that the advice of expert council be used in every step of the negotiations.

* * *

The Honolulu County Medical Society met on August 29, 1961, in the Mabel Smyth Auditorium. Approximately 132 members were present. Also present were Dr. Burden, HMA President, and Tom Rice, HCMS attorney.

The Medical Care Plans Committee report to the Board of Governors recommending the approval of the individual contracts between the physicians and HMSA, and the contract between the Medical Society and HMSA as distributed this evening was read by Dr. Hartwell. Dr. Hartwell also stated that there was no recommendation from the Board of Governors. Mr. Richard Kennedy reviewed some of the highlights of the negotiations which took place between HMSA and HCMS representatives, and Mr. Tom Rice commented on the many aspects of contract negotiations. A question and answer period followed.

A motion that item 5 of the Application for Participating Physician Membership in HMSA as circulated be amended to include the words, "of the Medical Committee" between "designated representatives" and "to examine any of my records," was made by Dr. Herbert Chinn, and motion was seconded. Motion did not pass. Ballot result was 63 No and 62 Yes.

Dr. Liljestrand moved that the proposed drafts as distributed be approved. Motion was seconded and carried.

* * *

The Honolulu County Medical Society met on September 12, 1961, at 7:30 P.M. in the Mabel Smyth Auditorium. Approximately 60 members were present.

Robert Nordyke, M.D. spoke on "Nuclear Medicine: Diagnosis and Treatment."

New members introduced by President Hartwell were Drs. Ira Hirschy, Royal De Lany, and Henry H. Y. Yim.

Dr. O. D. Pinkerton read a resolution in honor of Dr. C. J. Kusunoki, recently deceased.

The resolution was unanimously passed. A moment of standing silence was observed.

Dr. Hartwell presented the recommendation of the Board of Governors that Dr. Y. S. Seto be granted life membership. A motion to grant life membership to Y. S. Seto, M.D., was made, seconded, and passed.

(Continued on page 172)

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- to support the usual diet

References: 1. Sturgeon, P., in Wallerstein, R. O., and Mettier, S. R.: Iron in Clinical Medicine, Los Angeles, University of California Press, 1958, p. 183. 2. Smith, N. J., and Schulz, J., op cit., p. 65.

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Contraindications: Biliary tract obstruction, acute hepatitis, and (for DECHOLIN with Belladonna and DECHOLIN-BB) glaucoma.

Precautions: Periodically check patients on DECHOLIN with Belladonna and DECHOLIN-BB for increased intraocular pressure. Also observe patients on DECHOLIN-BB for evidence of barbiturate habituation or addiction, and warn drivers against any risk of drowsiness.

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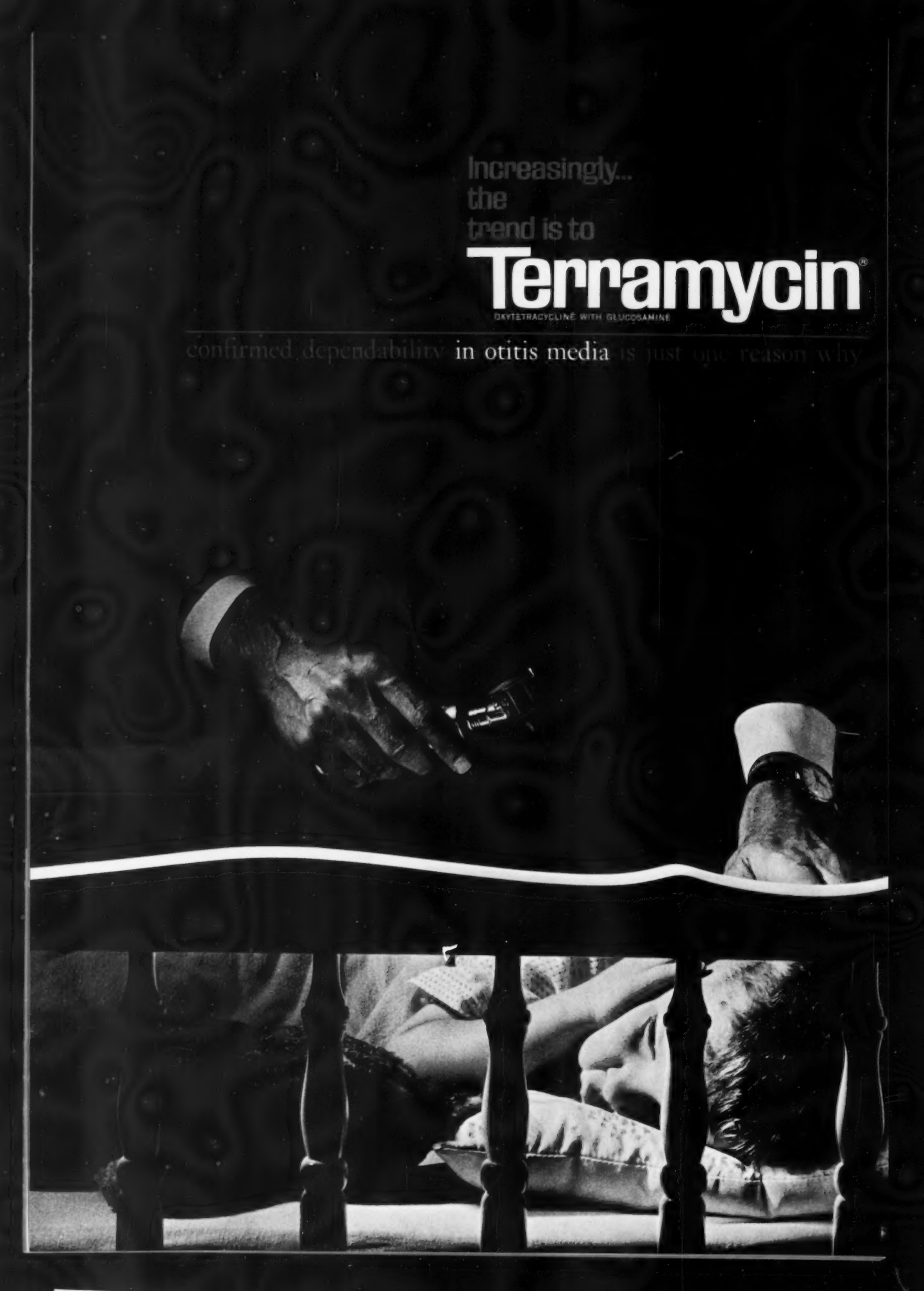
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*Jacques, A. A., and Fuchs, V. H.: J. Louisiana M. Soc. 113:200, May, 1961.

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DATE NOV-8 61

PATIENT'S ACCOUNTS RECEIVABLE		
1. PREVIOUS TOTAL OUTSTANDING	(+)	14,350.50
2. FEES CHARGED TO PATIENT'S ACCOUNTS TODAY	(+)	135.00
3. ADDITIONAL CHARGES	(+)	
4. TODAY'S RECEIPTS	(—)	120.50-
5. DISCOUNTS ON TODAY'S SERVICES	(—)	5.00-
6. CREDIT (MINUS) ADJUSTMENTS	(—)	
7. TOTAL OUTSTANDING TO DATE	(*)	14,360.00*←

CASH STATEMENT		
8. TODAY'S RECEIPTS (ACTIVE ACCOUNTS)	(+)	120.50
9. TODAY'S RECEIPTS (COLLECTION ACCOUNTS)	(+)	
10. TOTAL RECEIPTS (EQUAL TO BANK DEPOSIT)	(*)	120.50*←

ACTIVITY TODAY		
11. FEES CHARGED TO PATIENT'S ACCOUNTS TODAY	(+)	135.00
12. DISCOUNTS ON TODAY'S SERVICES	(—)	5.00-
13. NET FEES FOR TODAY'S SERVICES	(*)	130.00*←

CURRENT MONTH'S BUSINESS	FEES CHARGED	RECEIPTS
14. PREVIOUS DAY'S TOTAL	705.50	642.00
15. TODAY'S TOTAL	130.00	120.50
16. REIMBURSEMENT (DECREASES TOTAL INCOME)		5.00-
17. ADDITIONAL CHARGES		
18. TOTAL TO DATE	835.50*←	757.50*←

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Vitamin D	1,000 U.S.P. Units
Thiamine Mononitrate	10 mg.
Riboflavin	10 mg.
Niacinamide	100 mg.
Vitamin C	200 mg.
Pyridoxine Hydrochloride	5 mg.
Calcium Pantothenate	20 mg.
Vitamin B_{12}	5 mcg.

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"nutrition...present as a modifying or complicating factor in nearly every illness or disease state"[1]

1. Youmans, J. B.: Am. J. Med. 25:659 (Nov.) 1958

cardiac diseases "Who can say, for example, whether the patient chronically ill with myocardial failure may not have a poorer myocardium because of a moderate deficiency in the vitamin B-complex? Something is known of the relationship of vitamin C to the intercellular ground substance and repair of tissues. One may speculate upon the effects of a deficiency of this vitamin, short of scurvy, upon the tissues in chronic disease."[2] 2. Kampmeier, R. H.: Am. J. Med. 25:662 (Nov.) 1958.

arthritis "It is our practice to prescribe a multiple vitamin preparation to patients with rheumatoid arthritis simply to insure nutritional adequacy . . ."[3]

3. Fernandez-Herlihy, L: Lahey Clinic Bull. 11:12 (July-Sept.) 1958.

digestive diseases Symptoms attributable to B-vitamin deficiency are commonly observed in patients on peptic ulcer diets.[4] Daily administration of therapeutic vitamins to patients with hepatitis and cirrhosis is recommended by the National Research Council.[5] 4. Sebrell, W. H.: Am. J. Med. 25:673 (Nov.) 1958. 5. Pollack, H., and Halpern, S. L.: Therapeutic Nutrition, National Academy of Sciences and National Research Council, Washington, D. C., 1952, p. 57.

degenerative diseases "Studies by Wexberg, Jolliffe and others have indicated that many of the symptoms attributed in the past to senility or to cerebral arteriosclerosis seem to respond with remarkable speed to the administration of vitamins, particularly niacin and ascorbic acid. These facts indicate that the vitamin reserve of aging persons is lowered, even to the danger point, more than is the case in the average American adult."[6] 6. Overholser, W., and Fong, T.C.C. In Stieglitz, E. J.: Geriatric Medicine, 3rd edition, J. B. Lippincott, Philadelphia, 1954, p. 264.

infectious diseases Infections cause a lowering of ascorbic acid levels in the plasma; and the absorption of this vitamin is reduced in diarrheal states.[7] 7. Goldsmith, G. A.: Conference on Vitamin C. The New York Academy of Sciences, New York City, Oct. 7 and 8, 1960. Reported In: Medical Science 8:772 (Dec.10) 1960.

diabetes Diabetics, like all patients on restricted diets, require an extra source of vitamins.[8] "Rigidly limiting the bread intake of the diabetic patient automatically eliminates a large amount of thiamin from the diet. . . . There is some evidence of interference with normal riboflavin utilization during catabolic episodes."[9]

8. Duncan G. G.: Diseases of Metabolism 4th edition W. B. Saunders, Philadelphia, 1959, p. 812. 9. Pollack, H.: Am. J. Med. 25:708 (Nov.) 1958.

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COUNTY SOCIETY REPORTS

(Continued from page 166)

Dr. Hartwell read Dr. Moore's letter of resignation as Secretary. Dr. Moore will serve as Secretary until the coming annual meeting.

R. M. Kennedy introduced Howard Pearce, the new executive secretary. A lei was presented by Mrs. Lois Lucas, President of the Woman's Auxiliary. Mr. Pearce gave a brief talk.

President Hartwell gave a farewell message to Mr. Kennedy who will leave the Society. A lei was presented by Mrs. Lucas. Mr. Kennedy gave a brief aloha message.

Two recommendations he left for the Society were: (1) That the Society have a negotiation committee which is appointed to negotiate fee schedules and contracts, and (2) that Hawaii Medical Association take a more mature role and assume rightful statewide projects.

Dr. Arnold, Jr. appealed to the members to make reasonable contributions to the Community Chest.

A detailed progress report on the work of the PR Committee was presented by Dr. Wm. Stevens.

A. S. HARTWELL, M.D. for
R. D. MOORE, M.D., *Secretary*

Kauai

The regular monthly meeting of the Kauai County Medical Society was held in the library of the G. N. Wilcox Memorial Hospital on August 1, 1961. The meeting was called to order by Dr. Cockett, President, at 7:40 P.M. Dr. J. A. Burden, President of the Hawaii Medical Association, was present as guest speaker.

Dr. Burden discussed the various factors involving the HMSA, the State Association and the Honolulu County Society. He then reported on the American Medical Association Annual Meeting.

Dr. Burden also spoke on Workmen's Compensation in Hawaii and present negotiations for a new fee schedule.

The question of Social Security requests was brought up which involved a physical examination and the completion of a report. It was unanimously agreed that a charge of $5.00 should be made for this.

* * *

The regular meeting of the Kauai County Medical Society was called to order by Dr. Cockett, President, at 8:45 P.M. on September 5, 1961, at the G. N. Wilcox Memorial Hospital Library in Lihue, Kauai. Dr. Mary Wicks of the Bureau of Mental Health was present as guest.

A letter from Mr. Morris Shinsato, attorney, was read in reference to a medical payment program for County pensioners and their dependents. Dr. Boido stated that the Board of Supervisors of Kauai County accepted the HMSA fee schedule. He also stated that due to a lack of secretarial help, the County could not make payments for the present and the near future.

Dr. Cockett presented and discussed the new HMSA Contracts. It was moved by Dr. Boyden and seconded by Dr. Kim that the above be accepted. All members present approved. Dr. Boido moved that the Kauai County Medical Society instruct its delegate to inform the HMSA that we prefer to have an equal number or greater number of Medical Directors from all Counties on the Board of Directors of the HMSA as compared to non-medical directors now present on this Board. This was seconded by Dr. Herter and carried by a majority vote.

A letter from Dr. Rodney West, Secretary of the Hawaii Medical Association on the present status of Dr. Worth's membership was read. It was moved, seconded and carried that Dr. Worth be placed on an inactive status with dues waived.

Dr. Peter Kim spoke about the Diabetic Drive which will be held on Kauai from November 12 to 18, 1961. It was moved, seconded and carried that the Kauai County Medical Society donate $20.00 for the purchase of diabetic detection kits for display and usage.

W. W. GOODHUE, M.D.
Secretary-Treasurer

Maui

A dinner meeting of the Maui County Medical Society was held at 6:30 P.M., December 20, 1960, at the Vineyard Chop Suey House.

Delegate to HMSA, Dr. Tompkins, reported that the performance in Molokai was again far above average and that the plan is being wrecked. Dr. Moran also reported similar irregularities with regard to the U. S. Life Medical Plan. Much discussion followed, however, no action was taken at this time.

The Nominating Committee presented the following slate for 1961:

DR. SEIYA OHATA.....*President*
DR. WILLIAM E. IACONETTI.....*Vice President*
DR. CLIFFORD F. MORAN.....*Secretary-Treasurer*

(Continued on page 174)

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COUNTY SOCIETY REPORTS

(Continued from page 172)

Dr. McArthur moved and Dr. Sanders seconded that nomination be closed and the secretary be instructed to cast a unanimous vote. Passed.

The committee of three, consisting of Dr. Shimokawa, Dr. Tompkins and Dr. Burden, who were appointed to investigate HMSA irregularities on the part of a member, reported that they were unable to put their fingers on anything and therefore unable to make recommendations. Inasmuch as a thorough investigation was not made, the chair instructed the committee they should do so and be prepared to report at the next meeting.

Dr. Burden moved and Dr. Iaconetti seconded that Dr. Tompkins be reappointed as Delegate to HMSA and Dr. Sanders be appointed first alternate and Dr. Underwood be the second alternate. Passed.

* * *

A special meeting of the Maui County Medical Society was held at the Wailuku Hotel at 8:00 P.M. on Friday, March 24, 1961. Guests present were: Doctors Bowles, Edgar, Goto, Kaiser, and Wallis.

Dr. Goto presented an interesting case. The diagnosis is a moot one. However, the possibility of barbiturate withdrawal and porphyria is good. Dr. Kaiser gave a talk on treatment of hyperemesis gravidarum.

A movie, "Resuscitation of the Newborn," was shown.

The President announced that the Department of Health has available two EENT men, Doctors Pang and Fraser, to conduct an otology clinic and to be on our program. Dr. Kliewer made a motion which was seconded by Dr. Sanders that two local otologists be utilized instead of having outside M.D.'s for local clinics.

* * *

The Maui County Medical Society held their regularly scheduled meeting on April 18, 1961 at the Wailuku Hotel. One guest was present, Dr. Wallis.

The Society was entertained by the Hawaii Medical Service Association who were represented by Mr. C. T. Oliphant, President; Mr. Joseph Veltmann, Executive Vice President; and Mr. Albert Yuen, Treasurer. Other guests were Dr. Robert Faus, Mrs. Charlotte Mochizuki, and Mrs. Louise Smith.

A very interesting discussion of different HMSA plans was undertaken by Dr. Burden, Mr. Veltmann, and Mr. Yuen after a brief introduction by Mr. Oliphant.

C. F. MORAN, M.D.
Secretary-Treasurer

BOOK REVIEWS

(Continued from page 153)

and phonocardiography were discussed, including some of the newer studies on intracardiac phonocardiography which I felt were most enlightening. Vectorcardiography was again discussed; I did not feel that this lends itself particularly to the everyday practice of cardiology. There were several chapters devoted to cardiac catheterization, newer methods of localizing shunts, and angiocardiography, particularly selective angiocardiography.

The last chapters dealt with open heart surgery, discussing the role of the anesthesiologist, the various pump oxygenators, and the postoperative care. These were most informative and gave one a rather well-written picture of this whole new field.

This book should be in the library of every cardiologist and cardiac surgeon. Also, the general practitioner would find the topics discussed here educational and interesting.

ELMER C. JOHNSON, M.D.

English for the Foreign Physician

By J. M. Martins, M.D., 121 pp., $5.75, Charles C. Thomas, 1960.

From time immemorial, the language barrier has been one of the major problems of the human race. From time to time, people have tried to create or establish an international language that could be used by all. Others have tried to simplify and streamline existing languages to make it easy for others to use. Such a work is "English For The Foreign Physician." This book is divided into five basic sections: Conversation, Abbreviation, Vocabulary, Questions and Exercise. Each chapter is devoted to one of the medical services, such as, "General Medicine Ward Round," "Chart Conference in the Chest Service," "GI Conference," etc. The author has tried to use the phrases and vocabulary peculiar to the particular service.

The need for such a publication has been felt for a long time—not only for foreign physicians, but also for our own interns, residents, nurses, technicians, as well as the administrative staff of hospitals.

It is a monumental task to compile a book of this nature that will be suitable for people from many lands and many language backgrounds. Since the Second World War, English has become more or less the scientific language of the world. However, many nations still use Latin and French. Therefore, if the definition in the

(Continued on page 176)

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Isolyte® M Maintenance with 5% Dextrose For routine maintenance in adults and older children	50	40	35	—	—	—	40	20	—	—	15	180	400
Isolyte P Pediatric Maintenance For routine maintenance in infants and younger children	50	25	20	—	3	—	22	23	—	—	3	180	350
Isolyte E Extracellular Replacement in Water For replacement of intravascular, interstitial, transcellular losses other than gastric	—	140	10	5	3	—	103	—	47	8	—	10	320
Isolyte E Extracellular Replacement with 5% Dextrose For use as above	50	140	10	5	3	—	103	—	47	8	—	180	570
Isolyte G Gastric Replacement with 10% Dextrose For replacement of gastric loss due to suction or vomiting	100	63	17	—	—	70	150	—	—	—	—	340	800
Also 2 New Potassium Solutions: **Kadalex® L** (20 mEq. K^+ and Cl^-/L.) 0.15% Potassium Chloride with 5% Dextrose in Water	50	—	20	—	—	—	20	—	—	—	—	170	290
Kadalex M (40 mEq. K^+ and Cl^-/L.) 0.3% Potassium Chloride with 5% Dextrose in Water	50	—	40	—	—	—	40	—	—	—	—	170	330

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BOOK REVIEWS

(Continued from page 174)

Abbreviation and Vocabulary sections were in more internationally known and accepted phrases, they would better serve their purpose.

The value of Questions and Exercise sections is doubtful. Not many of the foreign physicians with a language handicap could take the time from their already crowded schedule to answer the questions and do the exercises; and who would supervise their work? Such an undertaking needs classroom atmosphere and a well-planned schedule. The usefulness of this publication could be increased many fold if there were added a section devoted to the vocabulary and the abbreviations listed alphabetically.

TOMIC T. ROMSON, MHA

★Handbook of Pediatrics, 4th Ed.

By Henry K. Silver, M.D., 574 pp., $3.50 Lange Medical Publications, 1961.

In the Navy they say that if you can't eventually find the answer in "Navy Regs," it can't happen. In pediatrics they say that if you can't find a condensed answer quickly in the *Handbook of Pediatrics* by the three Henrys (Henry K. Silver, C. Henry Kempe, and Henry B. Bruyn), there is no such thing.

Anyway, our friends in Denver, Colorado, have produced a fine, quick reference book full of all sorts of tables of laboratory data, differential diagnosis, normal values, etc. Diseases are grouped under the organ or system involved, as well as in general classifications, such as allergic, infectious, metabolic, endocrine, neoplastic, collagen, development, prematurity, adolescence, etc. Each disease is outlined under headings, such as etiology, clinical findings, treatment, prognosis, laboratory data, etc.

This Fourth Edition is a practical, up-to-date, pocket sized (7 x 4 x 1 inch) reference book for anyone interested in pediatrics.

W. A. MEYERS, M.D.

★Symptom Diagnosis, 5th Ed.

By Wallace Mason Yater, A.B., M.D., M.S. (in Med), F.A.C.P., and William Francis Oliver, B.S., M.D., F.A.C.P., 1035 pp., $15.00, Appleton-Century-Crofts, 5th ed., 1961.

The 5th edition of "Symptom Diagnosis" brings up to date a book that in the past has enjoyed an excellent reception. The purpose of this volume is to offer easy diagnostic aids without overlooking many differential possibilities. It does this by outlining diseases associated with regional symptoms. There is in addition, an excellent table of differential diagnosis of many common medical conditions.

The authors are both experienced teachers and in presenting this revision have made many additions. This volume is an excellent reference book for the hospital admission or emergency sections as well as for the busy practitioner.

The front of this book contains specific instructions on how to make the best use of this diagnostic guide.

The seven-page appendix is divided into two sections.

(Continued on page 180)

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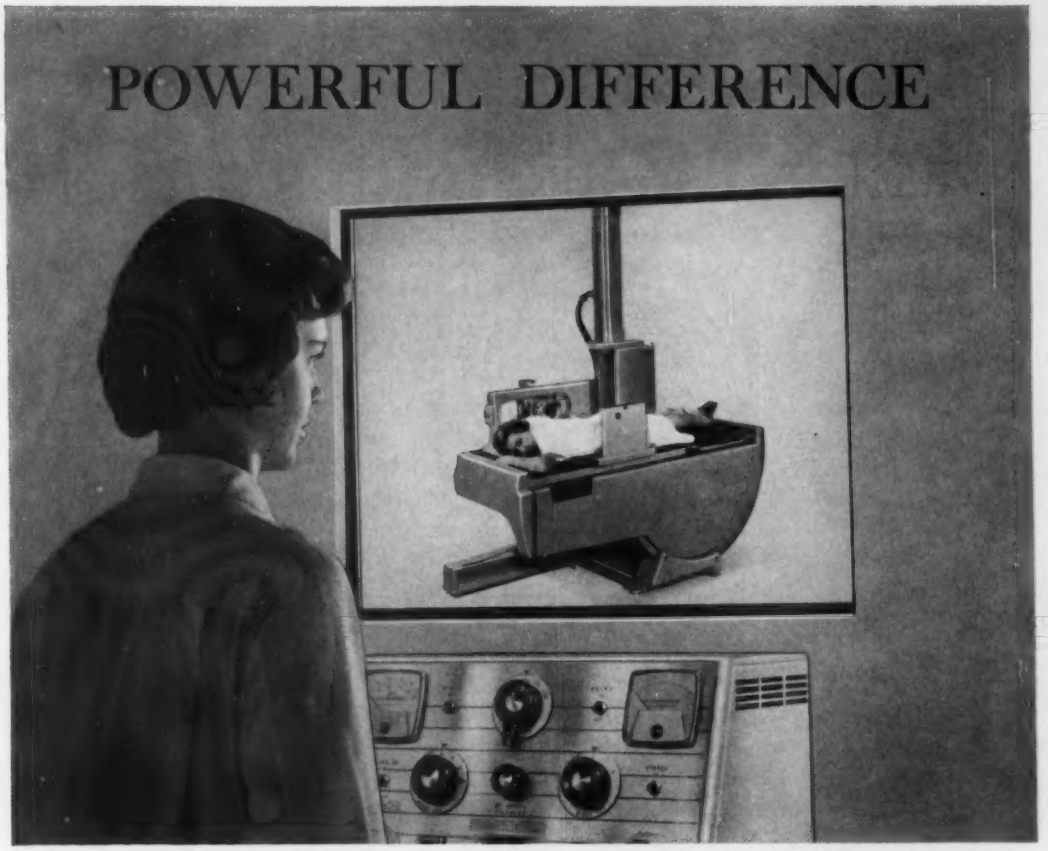

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No. 3 – gr. ½
No. 4 – gr. 1

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BOOK REVIEWS

(Continued from page 176)

In part one, common syndromes are defined. The second section is made up of diseases and signs associated with men's names.

This well presented reference book contains 1,035 pages with a complete index.

HENRY GOTSHALK, M.D.

Chest Pain, Systematic Differentiation and Treatment

By Nathan E. Reich and Rudolph E. Fremont, 366 pp., $9.00, The Macmillan Co., 1961.

A review of this short book would be good for every practicing physician, lest he fall into the present-day fear of the laity that every pain in the chest is due to either a coronary attack or a lung cancer. The complaint is common enough and the patient is usually exhibiting considerable concern. The answer to his problem is to be found in this well-organized, small volume. The authors approach the problem from an anatomical viewpoint and so miss very few, if any, causes of pain. Some are a little difficult to place in the proper compartment (or layer) and of course there is overlapping. Where one attempts to cover the ground so completely, the proper emphasis and adequate descriptions of common conditions are impossible. These are to be found in original articles and good texts, many of which are listed. References are necessary in a book of this type. These are well selected and are quite up to date. One of 1960 was noted and several as late as 1959 were included.

The book is not a bedside one or even a favorite chair companion. Style of writing cannot be very interesting where the material is so extensive. Organization is the main purpose and is well accomplished. And so for practicing physicians, it should be a good book to have around.

S. E. DOOLITTLE, M.D.

Dunham's Premature Infants, 3rd Ed.

By William A. Silverman, M.D., 578 pp., $15.00, Paul B. Hoeber, Inc., 1961.

This new edition of *Dunham's Premature Infants* as written by Dr. Silverman is a marked improvement on the previous editions. It is up to date, readable, and informative. The conciseness of the material augmented by extensive references should appeal to those who have only a passing interest as well as to those who have a much deeper interest in the problems of the premature infant.

ROSS Y. HAGINO, M.D.

★Management of Fractures, Dislocations, and Sprains

By H. Earle Conwell, M.D., and Fred C. Reynolds, M.D., 1153 pp., $27.00, The C. V. Mosby Company, 1961.

Fred C. Reynolds has assisted in the sixth revision of this classic textbook on traumatic injuries to the musculoskeletal system, this being the first revision since the death of J. Albert Key, in whose memory this edition is printed. The basic structure of the book including chapter, titles and general organization remains the same but the context has been thoroughly revised with dele-

(Continued on page 182)

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BOOK REVIEWS

(Continued from page 180)

tion of much repetitious, obsolete material, and introduction of newer methods of intramedullary fixation and prosthetic replacement, and discussion of deceleration injuries of the cervical spine as well as intervertebral disc disease. Newer aspects of bone healing, physiology, fracture complications, and treatment, and in particular newer trends in anesthesiology with relation to the injured patient have been included in this edition, with this modernization the book remains at the top of the list of textbooks for the student of trauma-

IVAR J. LARSEN, M.D.

Also Received

The Surgical Clinics of North America, Vol. 41, No. 2

By Frank Glenn, M.D., Guest Editor, pp. 265-544, W. B. Saunders Co., April, 1961.

A symposium covering the clinical management of patients with conditions of the cardiovascular system that are benefited by surgical measures.

Somatic Treatments in Psychiatry

By Lothar B. Kalinowsky, M.D., and Paul H. Hoch, M.D., 413 pp., $9.25, Grune & Stratton, 1961.

For psychiatrists only.

(Continued on page 186)

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1. Kareha, L. G., de Quevedo, N. G., Tighe, P., Kehrli, H. J., "Evaluation of Ilopan in Postoperative Abdominal Distention," Western J. Surg. Obs. & Gyn., 66:220, 1958.
2. Stone, M. L., Schlussel, S., Silberman, E., Mersheimer, W. L., "The Prophylaxis and Treatment of Postpartum and Postoperative Ileus with Pantothenyl Alcohol," Amer. J. Surgery, 97:191, 1959.

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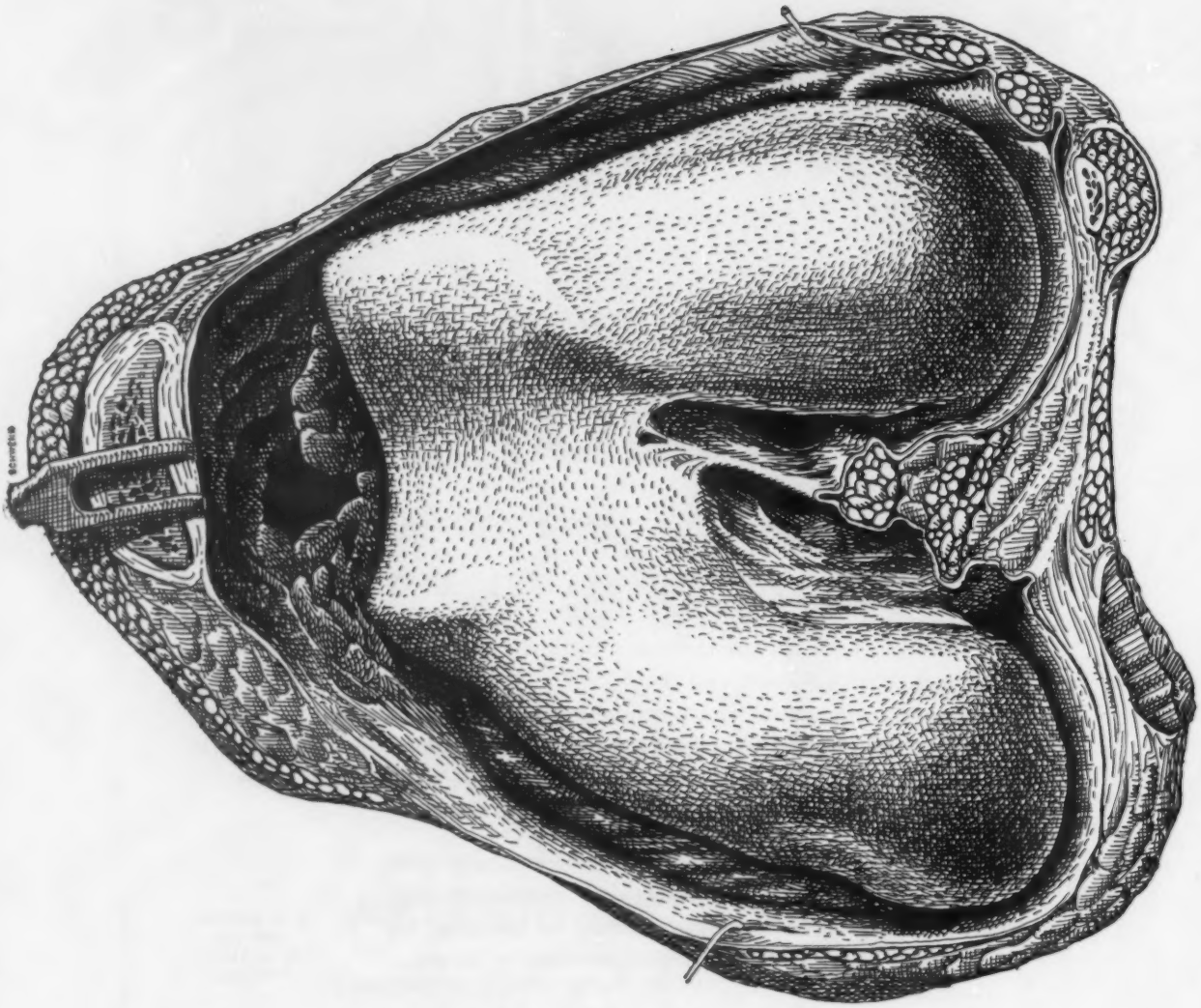

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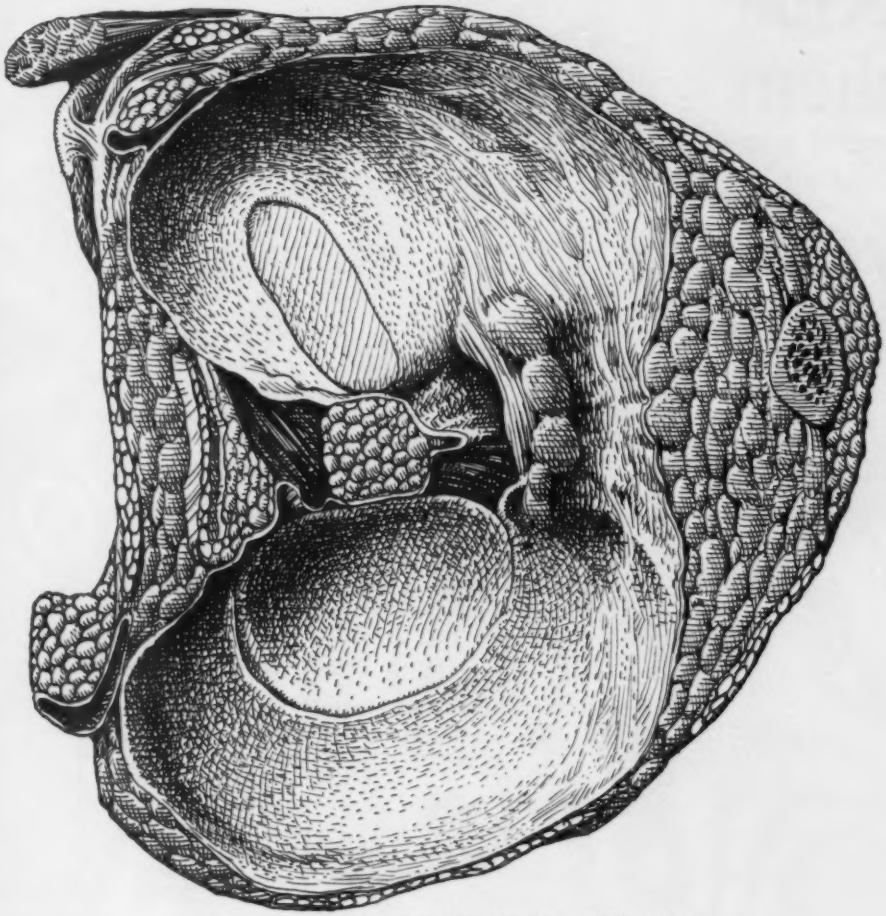

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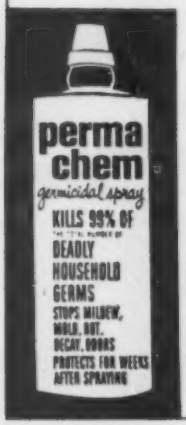

Distributed in Hawaii by
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*Journal of AMA, April 4, 1959
Vol. 169 pp 1549-1556

BOOK REVIEWS

(Continued from page 182)

Hypertension

Milton Mendlowitz, M.D., Editor, 156 pp., $6.50, Grune & Stratton, Inc., 1961.

Beautifully printed symposium—10 articles by 18 contributors.

Annals of the New York Academy of Sciences Vol. 91, Art. 3.

Franklin N. Furness, Editor, 223 pp., The New York Academy of Sciences, 1961.

Genetic perspectives in disease resistance and susceptibility. Wise and deep.

★Health Education

Edited by Bernice R. Moss, M.D., Warren H. Southworth, Dr. P.H., and John Lester Reichart, M.D., 429 pp., $5.00, National Education Association of the United States, 1961.

Fifth edition in 36 years of a book produced through the cooperation of the National Education Association and the A.M.A.

Psychology As Applied to Nursing

By Andrew McGhie, M.A., Ph.D., 267 pp., $4.50, E. & S. Livingstone Ltd., 1961.

This book is recommended to nursing instructors as well as to the student nurses for whom it was written.

(Continued on page 188)

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Field Studies in Mental Disorders
By Joseph Zubin, Ph.D., 495 pp., $6.75, Grune & Stratton, 1961.
For investigators in psychiatry.

CIBA Foundation Symposium on Quinones in Electron Transport
Edited by G. E. W. Wolstenholme, O.B.E., M.A., M.B., M.R.C.P., and Cecilia M. O'Connor, B.Sc., 453 pp., $11.00, Little, Brown & Company, 1961.
For the biochemically-oriented only.

Comparative Epidemiology of the Mental Disorders
Paul H. Hoch, M.D., and Joseph Zuzin, Ph.D., Editors, 290 pp., $9.75, Grune & Stratton, Inc., 1961.
Ecologic psychiatry.

★CIBA Foundation Study Group No. 7, Virus Meningo-Encephalitis
G. E. W. Wolstenholme, O.B.E., M.A., M.B., M.R.C.P., and Margaret P. Cameron, M.A., Editors, 120 pp., $2.50, Little, Brown and Company, 1961.
Pediatricians should own this and read it.

Multiple Sclerosis Prognosis and Treatment
By Leo Alexander, M.D., Austin W. Berkeley, Ph.D., and Alene M. Alexander, 188 pp., $7.50, Charles C. Thomas, 1961.
ACTH, if transfusions fail. There are 132 references

(Continued on page 192)

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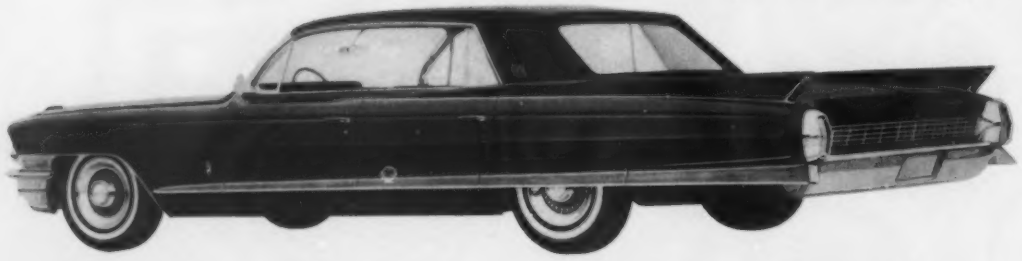

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1. The Composition of Milks, Publication 254, National Academy of Sciences and National Research Council, Revised 1953. 2. Brown, G. W.; Tuholski, J. M.; Sauer, L. W.; Minsk, L. D., and Rosenstern, I.: J. Pediat. *56*:391 (Mar.) 1960.

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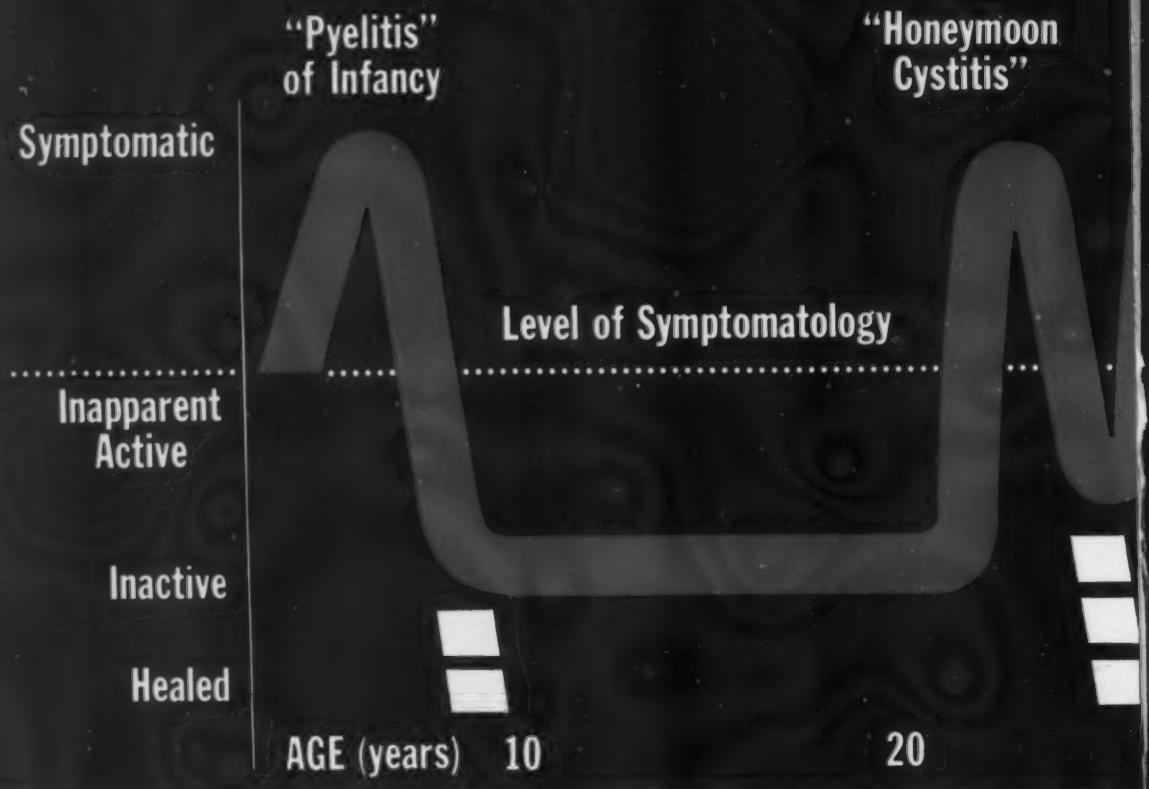
Natural History of Pyelonephritis



"... the theme that runs through the carefully taken history of most uremic patients with chronic pyelonephritis—the burning on urination of infancy, the chills and fever in childhood, the 'honeymoon' pyelitis, the recurrent urethritis treated so well and often locally—and yet the termination in uremia."[1]

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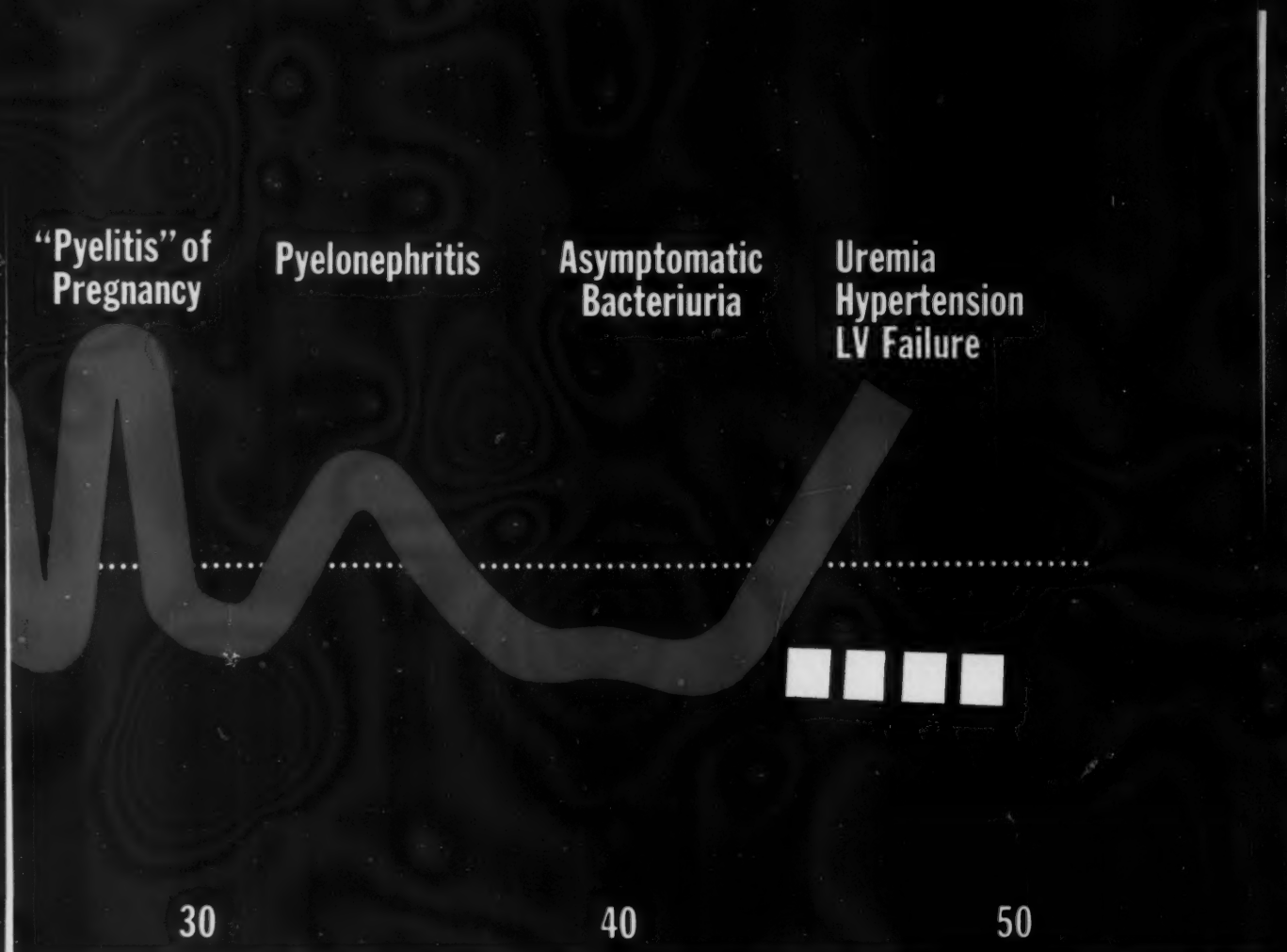

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1. Birchall, R.: Am. Practit. *11*:918, 1960. 2. Sanjurjo, L. A.: Med. Clin. N. Amer. *43*:1601, 1959.

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BOOK REVIEWS

(Continued from page 188)

and a good index, a whole page of which is devoted to ACTH.

★Progress in Medical Genetics, Vol. 1

By Arthur G. Steinberg, Ph.D., Editor, 341 pp., $9.75, Grune & Stratton, 1961.

Pretty deep stuff. The essay by J. B. S. Haldane on Normal Selection in Man is worth the whole price, however. There are 404 references on hemoglobinopathies alone!

Current Psychiatric Therapies, Vol. 1

By Jules H. Masserman, M.D., Editor, 246 pp., $7.50, Grune & Stratton, 1961.

For psychiatrists. A valuable, practical symposium by 41 contributors.

The Treatment of Tropical Diseases

By W. H. Jopling, M.R.C.P., D.T.M. & H., 202 pp., $5.00, The Williams & Wilkins Company, 1960.

Very British, very brief, aimed at Africa rather than the Pacific. A useful compendium.

Vaso-Seminal Vesiculography in Hypertrophy and Carcinoma of the Prostate with Special Reference to the Ejaculatory Ducts

By Gunnar Willer Vestby, 196 pp., $7.50, Oslo University Press, 1960.

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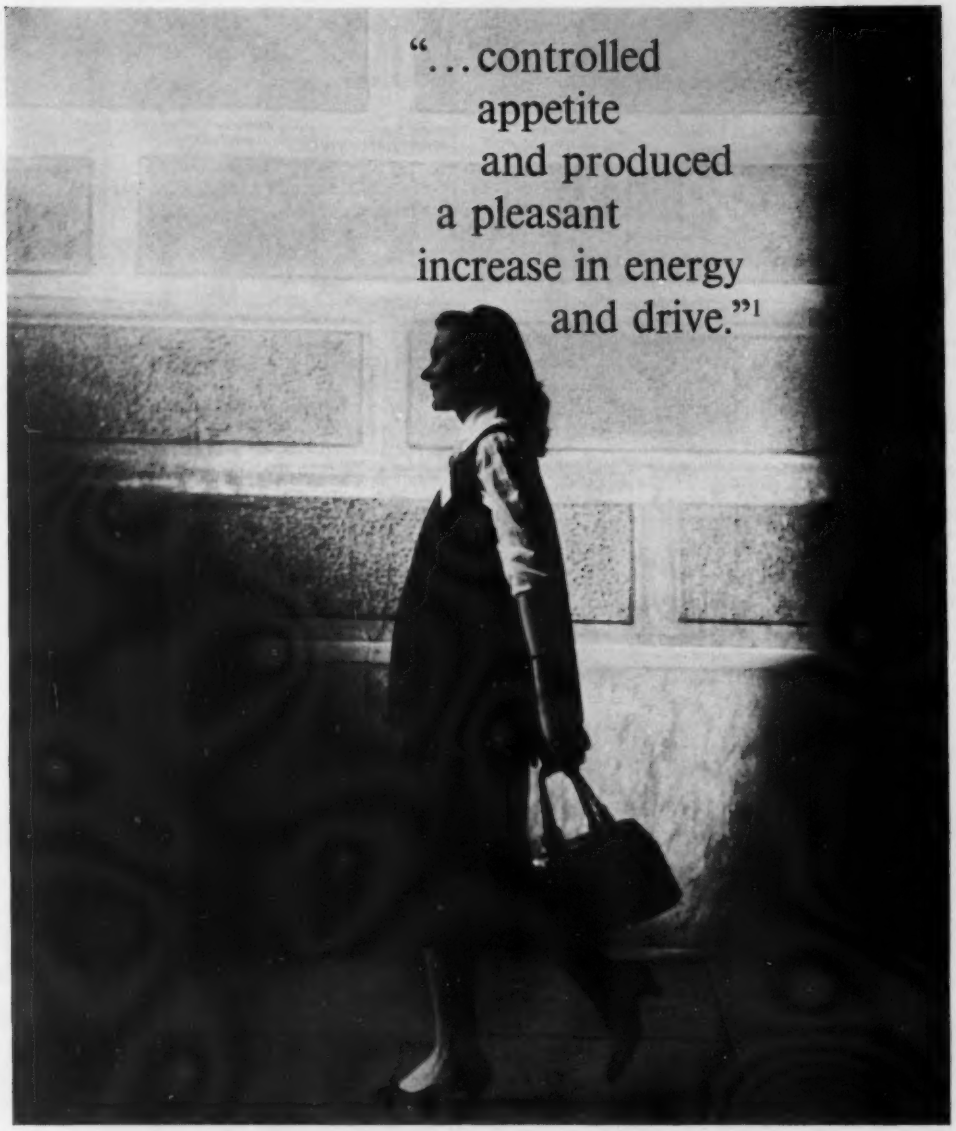

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1. Price, N.J.: The Problem of Weight Control in Pregnancy, from a report accompanying a scientific exhibit, A.M.A., Miami Beach, Fla., June 1960.

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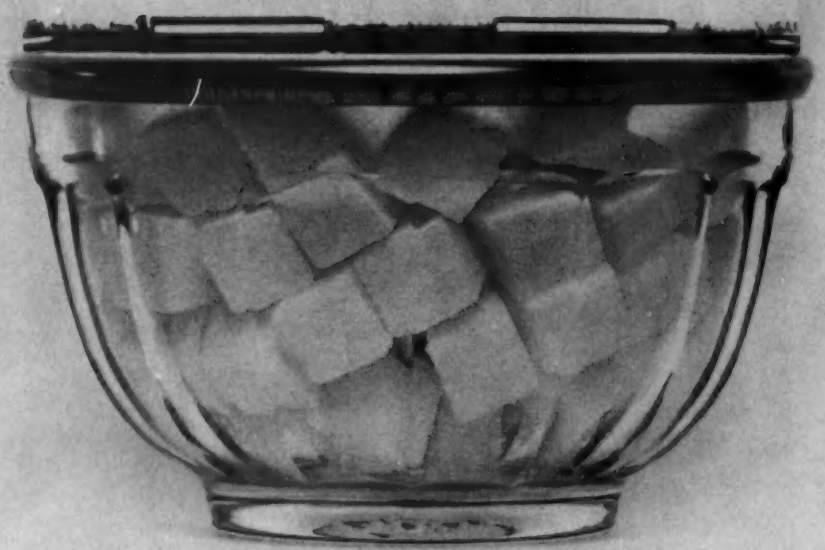

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(1) Danowski, T. S.: Diabetes Mellitus, Baltimore, Williams & Wilkins, 1957, p. 239. (2) McCune, W. G.: M. Clin. North America 44:1479, 1960. (3) Ackerman, R. F., et al.: Diabetes 7:398, 1958.

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References: (1) Roberts, H. J.: Am. J. Clin. Nutrition *8*:817-832 (Nov.-Dec.) 1960. (2) Tullis, I. F., and Allen, C. E.: Current Therap. Res. *3*:152-159 (April) 1961. (3) Antos, R. J.: Southwestern Med. *40*:693-697 (Nov.) 1959. (4) Tullis, I. F., Allen, C. E., and Overman, R. R.: Simple Effective Weight Reduction: A Clinical Study, Scientific Exhibit, 6th Internat. Cong. Int. Med., Basel, Switzerland, Aug. 24-27, 1960.

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